Air Trails

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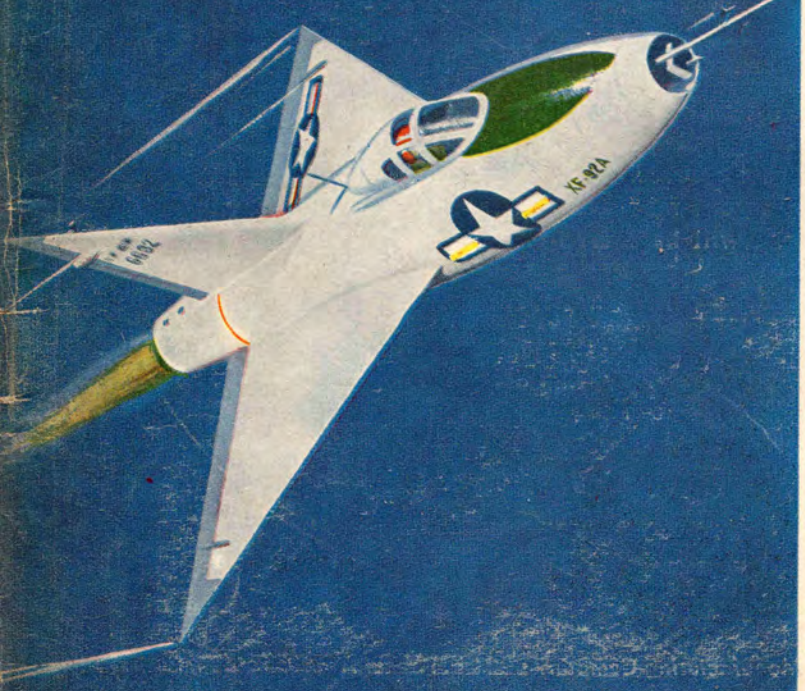
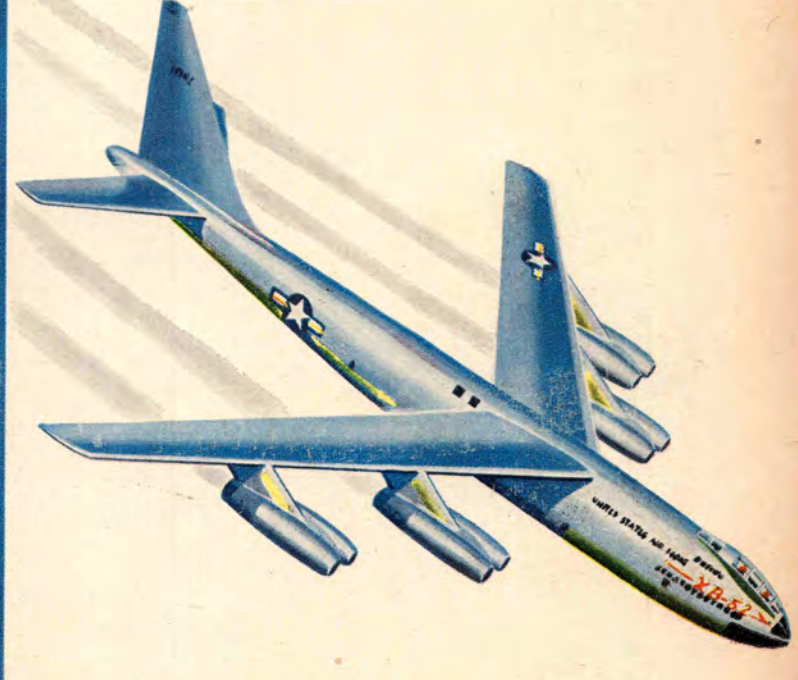


BOEING YB-52

CAL SMITH



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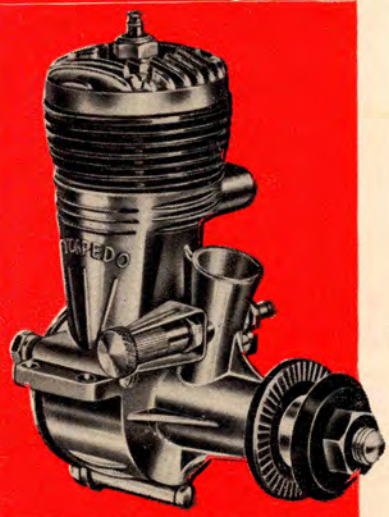

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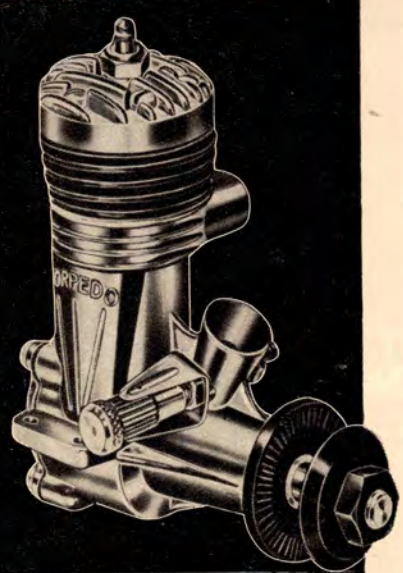

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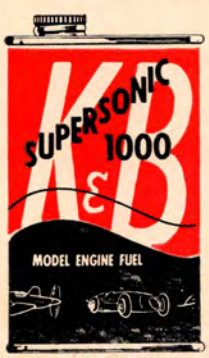

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AIR TRAILS

September
1952
Vol. 38, No. 6

Cover: Douglas XA3D, Lockheed F-94C, Convair XF-92A and Boeing YB-52—S. C. Smith

THE LEADING MAGAZINE OF AIR PROGRESS AND AEROMODELING

Editor: Albert L. Lewis. **Technical Editor:** Alexis Dawydoff. **Editorial Production:** Carl Happel. **Art Director:** W. F. Tyler. **Editorial Assistants:** Rose Borello and Rosalba Accardi. **Special Correspondents**—Washington: Kendall K. Hoyt; West Coast Modeling: Dick Everett.

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AIR TRAILS published monthly by Street & Smith Publications, Inc., at 575 Madison Ave., New York 22, N. Y. Entered as second class matter at the post office at New York, N. Y. Authorized as second class mail Post Office Dept., Ottawa, Canada.

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35c per copy. This issue is Vol. XXXVIII, No. 6. Please advise us if you move; allow four weeks for change of address. Give old and new address when notifying us. Subscription correspondence should be addressed to Subscription Dept., Street & Smith Publications, Inc., 304 E. 45th St., New York 17, N. Y.

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FROM THE READER

All communications to the editorial offices should be addressed to Air Trails, 304 E. 45th St., New York 17, N. Y.

Photo Correction . . . That's a very nice picture of the two planes in action from Vancouver, Wash. (July issue). Only there is one slight mistake. The picture was taken by Mr. Rufus Underwood on a 2¼ x 3¼ Bush Pressman at f 16-1/200. The copy sent in by Harry Ragan was bought from me. Although my husband is not a member of the Glo Bugs he flies with them sometimes.

Mrs. Rufus Underwood, Hillsboro, Ore.

PB-2a into Half-A . . . Can the plans for the PB-2a be made for Half-A by doubling them?

Harold E. Leaming, New Orleans, La.

● The Consolidated PB-2a makes a beautiful Half-A job by doubling the plans as they appeared in Air Trails. Either a solid or built-up wing can be used. Use 1/16" sheet (sanded thin) for the built-up wing covering. The fuselage sides can be cut from 1/16" sheet with dead soft blocks for the top and bottom, ⅛" sheet or 1/16" sheet will do for the tail surfaces. 1/16" wire will make a strong landing gear. Engines can range from .039 to .074 cubic inch displacement.

It's Worth It! . . . This letter is in comment over the increase in price of Air Trails. I was really in doubt about continuing to buy Air Trails when the price went up, but I sure must say the quality and quantity stayed with the price. I very seldom write to magazines like this but I realize that this is the only way, other than sales, to know what subscribers want.

K. D. Boyer, Wilmette, Ill.

Info on "Zoftig" Canard . . . In the July "From The Reader" you had two pictures of a speed plane. I have information about this plane. It was given to me along with a sister ship which is a Class D by the designer, Frank Calero, who has since given up model building. The ship was called the Pin Tail, it was powered by an Arden .19. It flew very well. The only trouble at first was with the dolly, but it's all right now.

Anthony Veneziano, Newark, N. J.

The Chinese Across the Valley . . . I am a subscriber to Air Trails and would like to take this opportunity to thank you for your very fine magazine. It is a welcomed monthly addition to my bunker.

I read with great interest your article "Flight Beyond Gravity." I hope you plan to publish more of such articles. For keeping well informed in the air world, your "Air Notes" is tops.

After seeing Douglas Rolfe's very detailed cutaway drawing of the Mustang P-51B, I thought I might mention the fact that its successor, the F-51, is raising much !#?XX! with the Chinese just across the valley from us.

Pfc. Charles H. Brooks, Jr., Korea.

More on "Poisonous" Dope . . . I read a letter which stated that the father of a certain modeler claimed that dope is poisonous. Here is what I found out. The big smell in most common dopes is a hetone called acetone with the formula CH_3COCH_3, a colorless liquid which boils at 56.5° Centigrade. It may be made by heating calcium acetate, which is a salt which may be made from acetic acid (vinegar) and lime.

Its worst effects on the human system are to produce intoxication (drunkenness) and sleep. It is *less* poisonous than ethyl alcohol, which is the alcohol in beer, wine, whiskey, etc. This information was found in the Encyclopedia Britannica.

The other materials in dope are non volatile (i.e., do not evaporate). Hence, one would have to drink the stuff to have any bad effects.

Jerome K. Stephens, Cleveland, Ohio

One Man's Jet for Hornet . . . I was very interested in your article "You Can Jet Power Jim's Hornet." I did the same thing last fall, only different. I screwed the Jetex "50" directly onto the bottom of the fuselage, underneath the leading edge of the wing, with the wing in the rearward position. I bent the landing gear forward *a little*, as the plane had a tendency to nose over on a rough field, weighted the nose, and flew. The plane does fly, but usually in loops. My extreme lack of experience may account for that. I'm mainly a "magazine aviator."

Allen Moore, Ithaca, N. Y.

More Flying Sites . . . Saw the "Message To The Aviation Industry" in your July issue and it struck me that support of model aviation by the industry and the military is the best way to increase interest in full size aviation.

Their cooperation and support with contests has been increasing but the real need is very inexpensive. It is merely to help the Sunday flyer to find a place to fly where he doesn't have to worry about baseball, farmer's crops, the noise of his A/2 engine, etc.

It seems to me that there are plenty of large parking areas, ramps, and parade grounds that are big enough for U-control, small free flights, and R/C. If security measures are required, a good model airplane club should certainly know about its members. How about it?

Bob Lange, Belleville, N. J.

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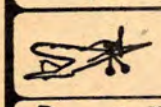

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The Civil Air Patrol Cadet

Florida Wing's Lake Squadron (Leesburg) prior to take-off on simulated search and rescue training mission under Maj. Frank P. Hatfield. (Official CAP photo by Lt. Don Porter.)

■ **The fall schedule** begins with recruiting new members and forming new units across the country. The more the work is kept in step with the school year, the more smoothly it goes.

Although units may be formed or recruiting done at any time, it is best to enroll high school students just after their vacation ends; take them through a full CAP year, culminating in next summer's encampments, like the ones just ended at 40 Air Force bases.

Then those who join now will be leaders next school year.

More Air Force aid is spurred by the need for interesting young people in air careers.

Had this started years ago, the problem of recruiting for the Air Force and its Reserves would be less difficult today. As it is, the CAP Cadets are a "de facto Reserve," until the Air Force gets a real one. What we had was largely stripped by the Korean call.

One big new plan to attract Reserve recruits is likely to result in furnishing better meeting places and training to CAP. This is the proposed system of Specialist Training Centers for the Reservists in main cities from coast to coast.

Each center will have a staff of Air Force officers, airmen, and civilians on full-time duty, plus its local Reserve units and their part-time staff. Purpose is to train in such courses as radio and radar, airplane mechanics, armament, and other needed specialties.

As now planned, the typical center will have classroom and work space, with training equipment, primarily for the Reserves but open to all members of the Air Force family in off hours.

Until the Air Force can recruit Reserve airmen, there will be plenty of room in these new local centers for CAP Cadets to get training which their present makeshift quarters do not afford.

All CAP units at or near possible sites for the Centers should keep in close touch with their nearby Volunteer Reserve units to cooperate and share in the new program.

More airplanes already have resulted from the new interest of high Air Force officers in the future of the CAP Cadets.

More than 200 L-16s have been distributed among the 52 State and Territorial Wings, to augment the wing-weary planes already on loan. These are the Aeronca Champion, 85 to 90 horsepower, with extra strong landing gear, capable of plenty of bounding on grass fields.

When the Korean war hit, the Army was shy on liaison planes for artillery spotting and other battlefield uses. Many of the L-planes assigned to CAP were flown away and shipped overseas.

Now that production is catching up and new models replace the old, CAP has had (*Continued on page* 58)

Join the Civil Air Patrol—the civilian auxiliary of the U. S. Air Force. Cadets are 14½ to 17; Senior members are 18 and over.

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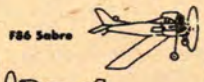

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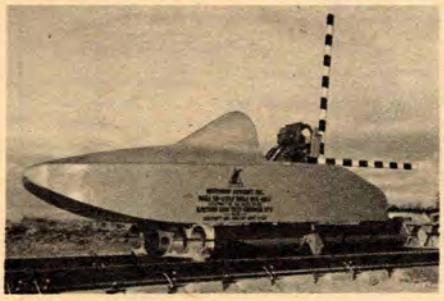

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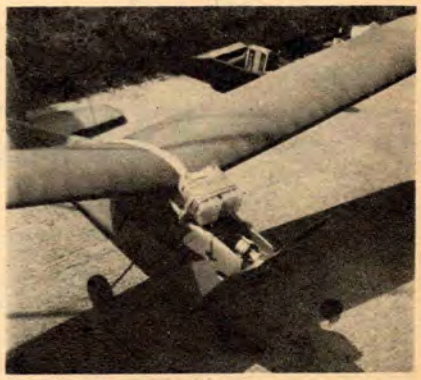
Walt Good and his world's record holding radio control endurance model; officials for flight included Al Lewis, "AT" Ed and Howard McEntee, "R/C" conductor. Flight witnessed by 500.

R/C

Around the modelplane radio-control circuit . . . comment and reports by a leading authority



Close-up of Good's power dept.: Forster .29, extra tanks ("double-dual system"—WG).

■ Big feature of the National Capital Meet at Washington was the successful attempt by Dr. Walter Good to break the F.A.I. International R/C Endurance record, previously held by a Russian. Dr. Good used his original Rudderbug, now in its fifth season; the only extra equipment fitted for this flight was a pair of Sullivan large-size plastic fuel tanks, which were lashed on over the windshield. A total of ½ lb. fuel could be carried for the Forster .29 glow engine. Radio was a new A.F. tone receiver on the Amateur 27 mc. band. Escapement rudder, and motor cut-off were available. Plane weighed 5 lbs. 14 oz. loaded.

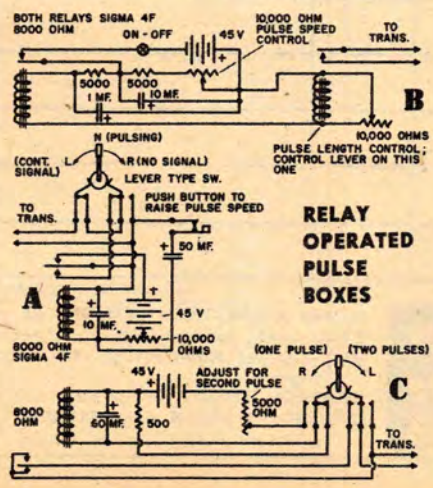
The flight (R.O.G. is mandatory) started with a take-off run of about 200 ft. and was quite uneventful. The time was 40 minutes, 27 sec. and motor run was about 26½ min. Russian record had been 23 min., 7 sec. The R/C event at this meet was conducted on the Flight Plan system (with rules very close to those in our Column for Feb. '52). This is an ideal system where there are not many officials available, as all duties were handled at this meet by Chief Judge Stan Potter and Recorder Bill Nesbitt with little difficulty.

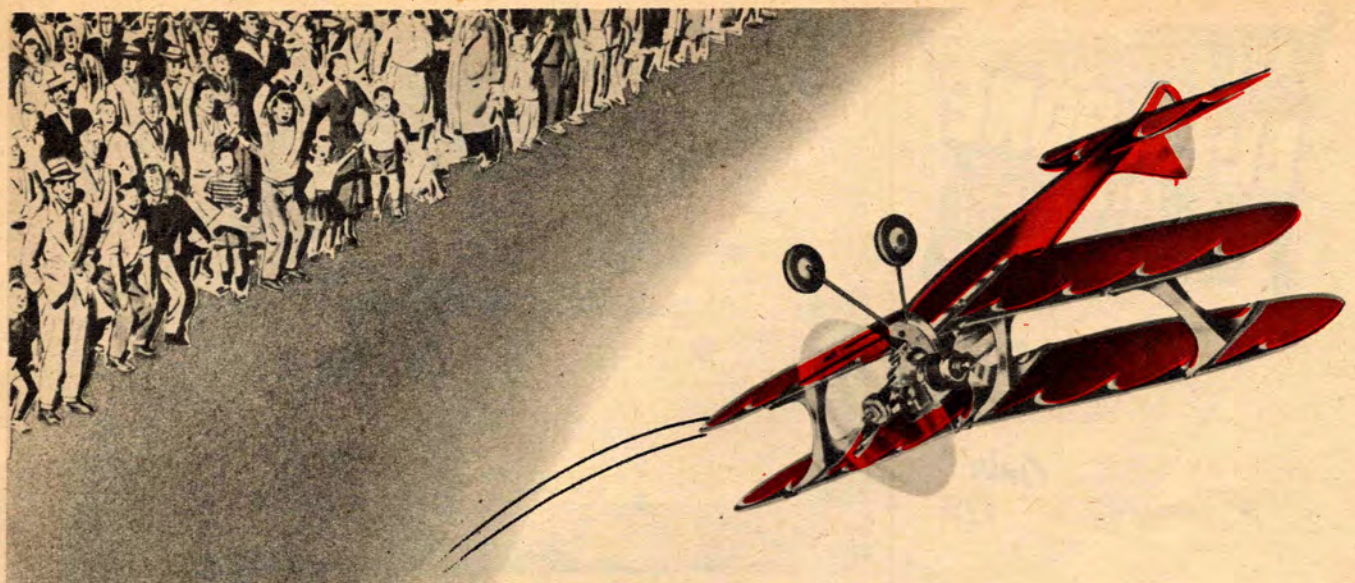
Twelve entrants made official flights, with about eight others who flew but did not try for score, due to various troubles. Winners: 1—John Klopp (Baltimore) on 27¼ mc. 2—James Martin (Greenbelt, Md.) on 27¼. 3—Harold Wilcox (Baltimore) 50 mc. The flyers were about evenly divided between 27¼, 50 and 465 mc.

Paul Johnson, the old R/C master from Des Moines, has been experimenting with relay-operated pulse boxes, instead of the more usual motor-driven variety. He is a semi-proportional control advocate, normally uses the system where steady signal is—let's say—left, no signal is right, while neutral is an evenly pulsed signal. Fig. A shows how he works this; a lever switch carries the control handle. With the setup shown, the pulses are rather slow, but if the pushbutton is pressed, fast pulses are produced, which may be used for motor 2-speed. If the two different pulse speeds are not required, the condenser across the relay may be made 60 mf., and the button and attached condenser omitted.

Pulse length is set by the variable resistor, so that the rudder is centered in neutral.

Paul and several others have used this rig for true proportional operation by (*Continued on page* 60)





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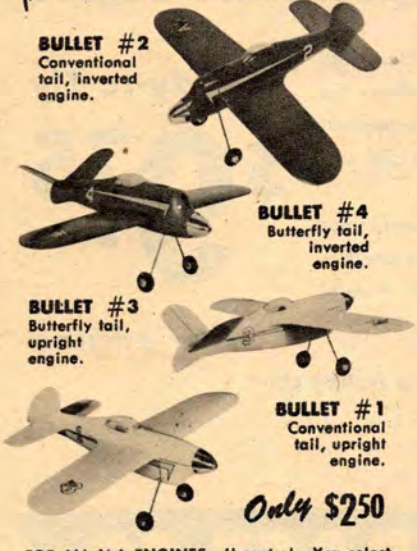

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air notes | AVIATION TODAY AND TOMORROW

FLIGHT PHOTO ABOVE shows Ray Stits' latest creation in diminutive airplanes, able successor to the famous "Junior." The new one, "Sky Baby," has a wingspan of only 7 ft. 3 in. and overall length of 9 ft. 10 in. It is a cantilever biplane, powered by an 85 hp Continental engine. It was flown by test pilot Bob Starr at Palm Springs, Calif., reaching a speed of 150 mph.

★ ★ ★

POWERPLANTS of the B-36 cost as much as did an entire B-29. It costs more to power the F-89 Scorpion than it did to purchase a P-47 Thunderbolt during World War II. Cost of development of the XB-52 is fifty times that of development of the XB-17. Engineering hours have increased from 140,000 for the first B-17 to 3,500,000 for the B-47. The famous Norden bombsight of World War II weighed about 125 lbs. and cost $5,000. The K-1 bomb sight used on B-20s in Korea weighs about 2,000 lbs. and costs $200,000. USAF is the biggest business in the world. Spends about 16½ billion dollars annually. Deals directly with 18,000 different companies. It purchases more, in dollar value, every year than General Motors, Standard Oil of N.J., American Telephone and Telegraph, U.S. Steel, and duPont combined. Employs more than 200,000 civilian workers. Inventories more than 1,000,000 items. Stores and distributes over 4,000,000 tons annually. Provides maintenance for aircraft and equipment on a scale ten times greater than all the U.S. commercial airlines together. Stocks 239 different sizes and types of shoes, 129 different coats, 13 different caps. Controls more than 30,000,000 sq. ft. of covered warehouse space. Publishes each year more than 12,000 separate technical publications.—*According to the Air Force Association.*

★ ★ ★

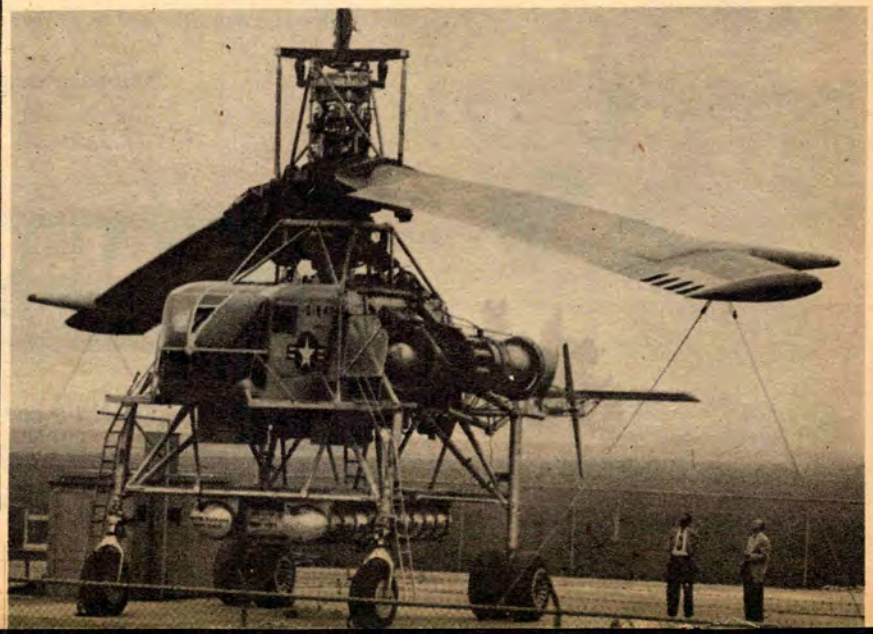
AIR FORCE trainees may receive in future their initial flight training in lightplanes. Flight instructions to be given by civilian contractors. . . . BELL HELICOPTER Model 47, NC-1H, first rotary wing aircraft to be licensed by CAA, now on display in Franklin Institute, Philadelphia, Pa.

★ ★ ★

DOUGLAS' Chief Engineer E. F. Burton predicted that 1952 will see beginning of development of U. S. jet transports.

★ ★ ★

WORLD'S LARGEST helicopter, the Hughes XH-17, shown below, is being prepared for its ground test at the Hughes Aircraft Co.'s plant at Culver City, Calif. Built specially for the Air Force, the jet-powered machine resembles a lumber carrier. It is designed for short-range moving of heavy military equipment, including tanks.



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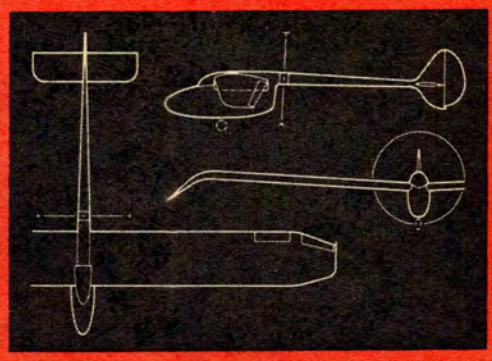
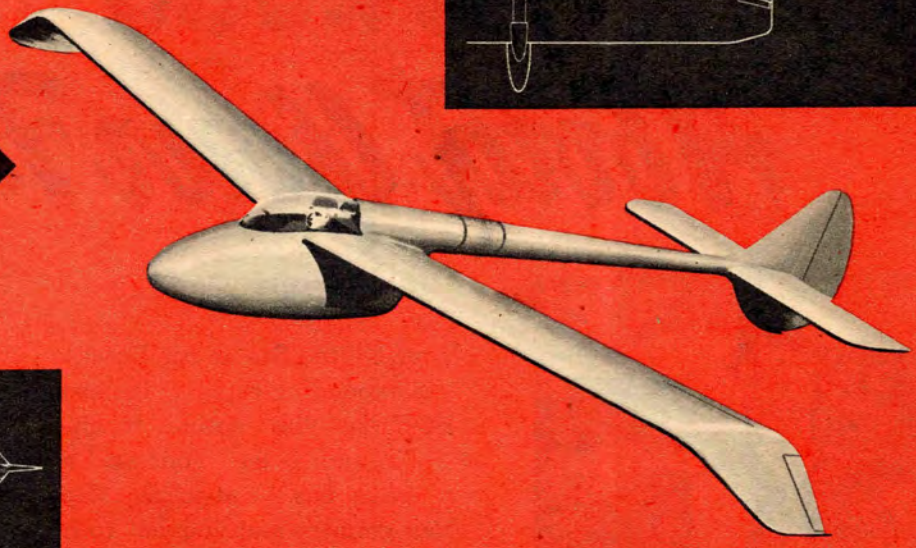
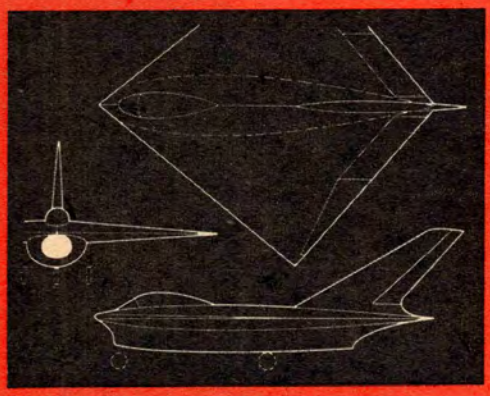
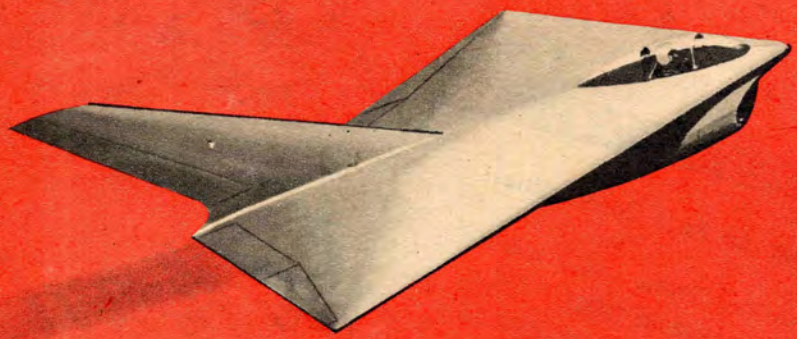


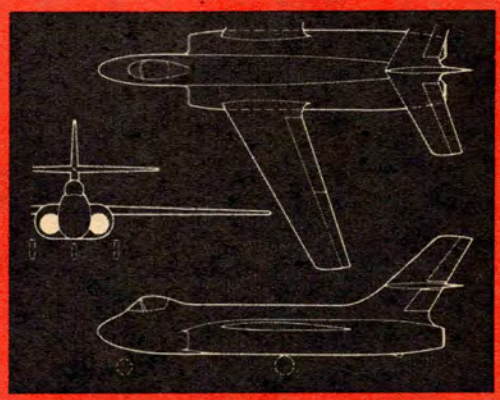
Most interesting and unusual design of the month: muscle-powered sailplane by Glen D. Bryant, aeronautical engineer of Starkville, Miss. Foot-operated pedals drive landing wheel for take-off, and propeller. Prop has hollow blades which pump air through sailplane's porous wings for boundary layer control, reducing drag by 50%. Minimum power required for take-off is 0.05 hp. Glide angle is 37.1, sinking speed 1.43 ft/sec.





Diamond planform wing interceptor by Howard Tomashek of Winona, Minn. It is powered by two 8000 lb. thrust axial flow jet engines. Armament consists of eight rocket tubes in the nose firing Mighty Mouse rockets. Fuel tanks and radar equipment are located in the wings. Wingspan is 48 ft., length 66 ft. Maximum speed 100 mph.





Twin-jet fighter-interceptor by Pfc. Eugene Tomashkin of Tinker AFB, Okla. It is exceptionally heavily armed, mounting six 20-mm and two 75-mm cannon in the nose. The two jet engines develop 7000 lbs. of thrust each. Fuselage, aft of pilot cockpit, holds sufficient fuel to permit the interceptor a range of 2000 miles. Plane is a single-seater, cockpit being equipped with ejection seat. Dive brakes on rear section of fuselage.

Air Trails has opened its columns to those who are interested in presenting plans for "aircraft of the future." Rules governing the competition are as follows: Three-view sketches of the proposed aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views. Give sketches of the complete airplane in three-quarter front and rear positions. Photos of a model of proposed design may be included. Information on power plant(s), estimated performance, dimensions, and explanations of any usual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The designs may be of any type, commercial aircraft, military planes (fighters, bombers, troop transports), planes for the private flyer and single-engine sporting or racing craft. The entry each month judged the most practical or of the greatest significance will receive an award of $25. Payments of $5 will go to the runners-up. Entries will not be returned and for that reason those participating should keep copies of all material submitted. Mail entries to Airmen of Vision, c/o Air Trails, 304 E. 45th St., New York 17, N. Y. Editors regret that because of large number of entries they cannot enter into correspondence on A. of V.

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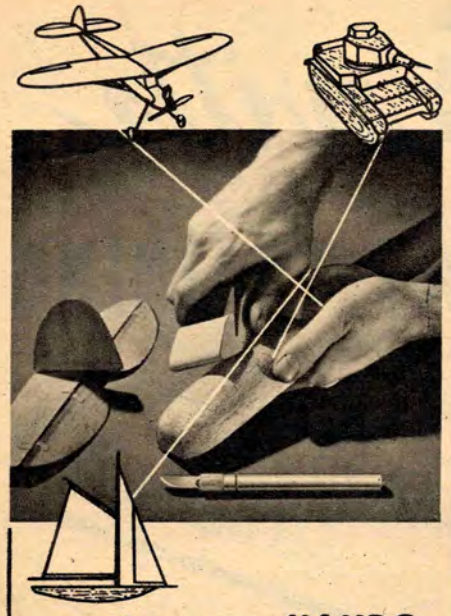

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■ In talking with many aviation companies and production experts of the industry about new engineering jobs brought about as a result of high-speed jet-propelled flight, we ran into some interesting contradictions. One company would emphatically state that jet flight has revolutionized much of the industry's thinking, and then the next would say there had been some changes made and new positions originated but not as much so as thought.

However, they all agreed that it has opened up every phase of aviation engineering, whether concerned with airframes or powerplants, through new and more complex problems as well as old problems coming back in new form.

George Hall, of North American Aviation, Inc., hit the nail right on the head. He said: "Our people feel that high speed flight has not necessarily created new jobs, but merely made it necessary for engineers and others to solve new problems and work in a broader field. There's a lot more evolution than revolution."

The "new problems" that now must be solved have, of course, made it imperative that more engineers be employed, particularly specialists in such things as mathematics, aerophysics, etc. The development of the jet engine and really high-speed flight have made suddenly important sciences and skills heretofore found in dissimilar industries.

For example, the designing of engine mufflers, never a particularly important science to the aircraft engine manufacturers before, suddenly becomes mighty important and essential to jet engine run-up tests. Safety in handling dangerous chemicals is at once vastly important to those assigned to research and testing of rocket engines.

The collective title of aviation engineer has been broken down into a dozen sub-heads, pin-pointing the specialization of the various experts. In order that you Air Adventurers may have an idea as to just *what* the various experts and groups of engineers actually do and are concerned with, so that you may decide which field you may wish to aim for, here are the facts about their work.

The Aerophysics and Atomic Energy Research Engineers are occupied with such subjects as rocket propulsion, supersonic aerodynamics, supersonic structures, autonavigation systems and their attending gyros, computors and accelerometers. At present a majority of aerophysics engineers are engaged in increasing the range and guidance accuracy of pilotless aircraft, while many more are involved in the development of fully auto- (*Continued on page* 62)

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McDonnell F2H-1 Banshee	No. Am. P-51 Mustang	Grumman F9F Panther
Republic F-84 Thunderjet	Vought F4U-1 Corsair	Martin B-57A Canberra
No. Am. F-86 Sabre	Republic P-47 Thunderbolt	Sikorsky H-5
Russian Mig 15	Curtiss P-40 Warhawk	Transport
Vought F7U Cutlass	Lockheed P-38 Lightning	No. Am. T-28 Trainer
No. Am. B-45 Tornado	Lockheed C-69 Constellation	Convair B-36 Bomber
Boeing B-47 Stratojet	Boeing B-29 Superfortress	Fairchild C-119 Packet

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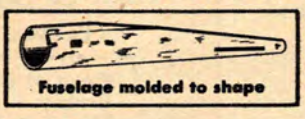
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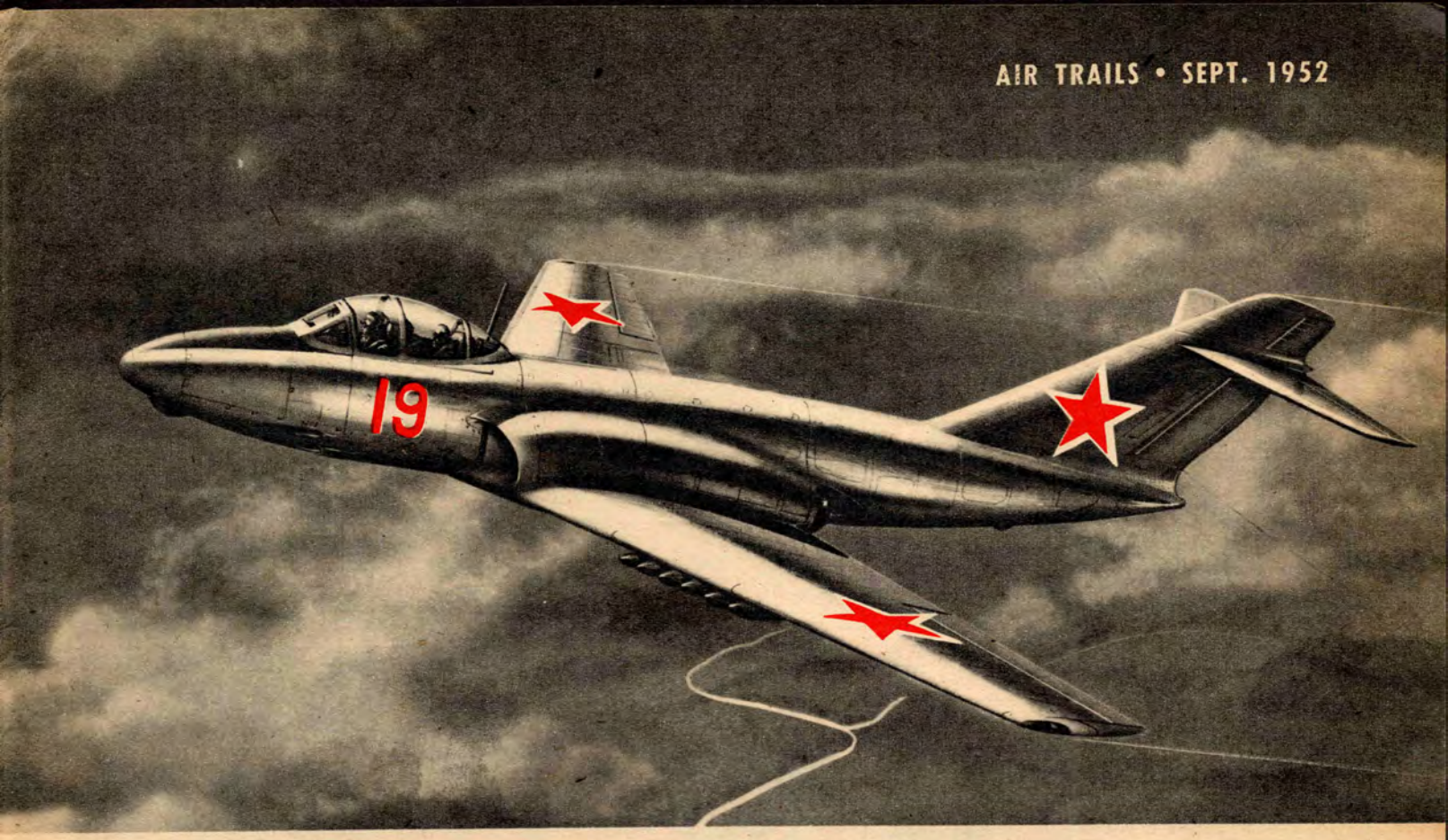
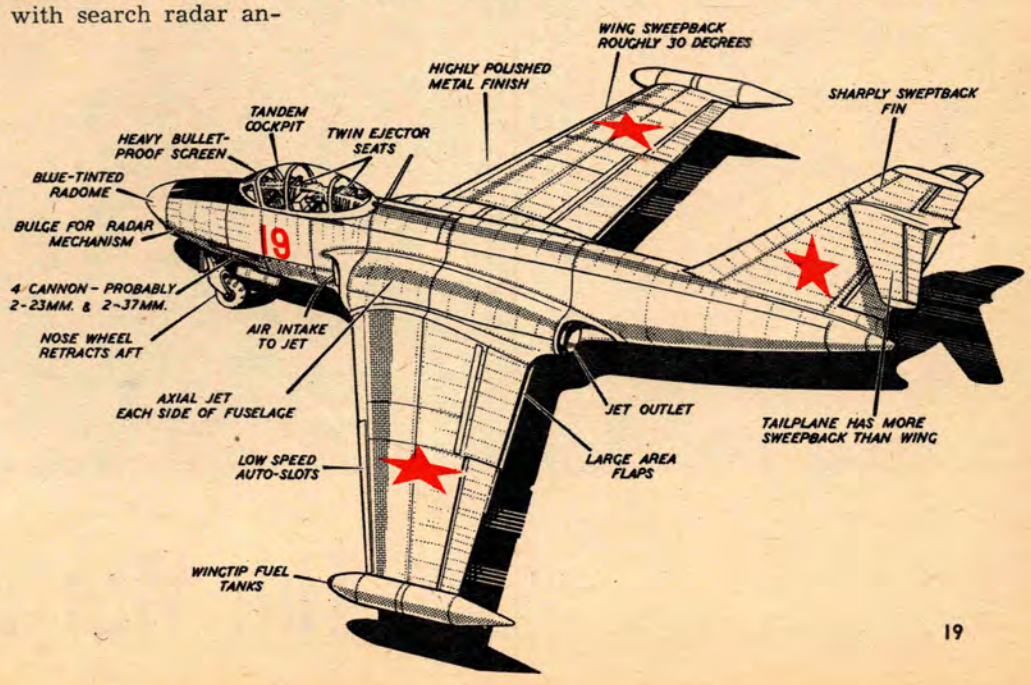


Soviet "Super Destroyer"

■ Back-slapping, guffawing young Russian pilots stationed at the Gropenhain fighter base in Eastern Germany have been openly talking of a new "super destroyer" which will shortly replace their MiG-15s and *sweep Western bomber forces from the skies.*

This new, heavily armed, multi-seat "night and bad weather" fighter, fitted with search radar antenna in the nose and comprehensive electronic equipment for round-the-clock interception, has been referred to by the Red pilots as a Mikoyan design, fitting in with reports that the Mikoyan-Gurevich fighter design team split up after producing the MiG-15 way back (*Continued on page* 57)

A new menace is in the red skies of Russia, a twin-jet all-weather fighter slated to replace the MiG. Equipped with latest electronic devices and armament, it is a larger and deadlier version of the Korean Communist fighter.

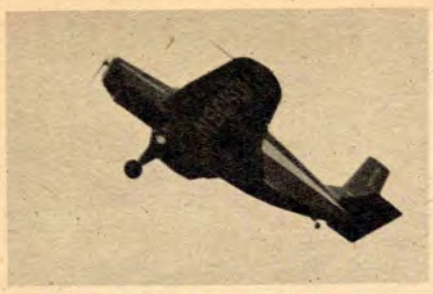


By WILLIAM GREEN

SEPTEMBER, 1952

A North American F-86 diving at ground target, blazing away with 5-inch HVAR rockets. The Sabres are equipped with 16 such missiles and can also carry bombs or combinations of rockets and bombs, depending on mission at hand

The World A-Wing

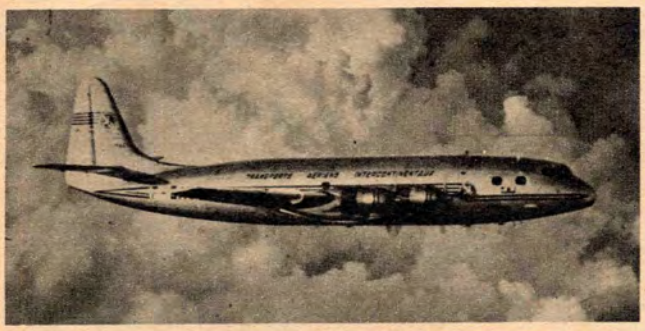


Lanier Paraplane II. A modified version of the aircraft built over four years ago, vastly improved after 3½ years of testing, eight months of this by Office of Naval Research. Among modifications: longer nose, extended by 2 ft., all-dural tail section, 25% chord flaps. Plane is capable of remaining in air at speed of 19 mph, taking off concrete runway in 100 ft. Can climb at angle as steep as 30 deg. According to designer Lanier, this performance is due to scoop under the wing and Vacu-jets slots on top which provide means for boundary layer control. Will go into production later this year. Contemplated for production also are a 5-place military evacuation job capable of flying at speeds less than 19 mph and roadable.

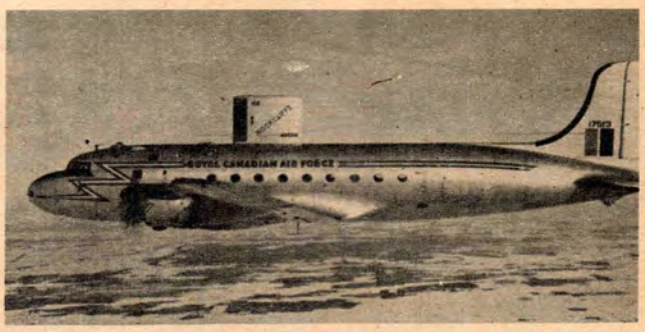
Lockheed "Family Album": Transports built by Lockheed during past 18 years. From bottom to top are: Super Constellation, Constellation; then from left to right: Electra, "14", Ventura and finally the Constitution. Speeds in 18 years rose from 200 to 400 mph.

The World A-Wing

A nosey character. Martin M-270, research flying boat to study most advantageous hull shape. Wings and engines are from a PBM.



S.E.2010 Armagnac, French super airliner now in service between France and No. Africa. Can carry 107 passengers. Span 160.5 ft.



Rockcliffe Ice Wagon. An RCAF Canadair specially fitted for research in icing problems. Fin on fuselage for wing de-icing experiments.

SO-30 Nene powered Bretagne, French airliner. Presently serves as experimental aircraft for testing feasibility of jet transports in France.

Bearing a close resemblance to the Taylorcraft, this Argentine lightplane, the El Boyero, is on order for flying schools and aero-clubs.

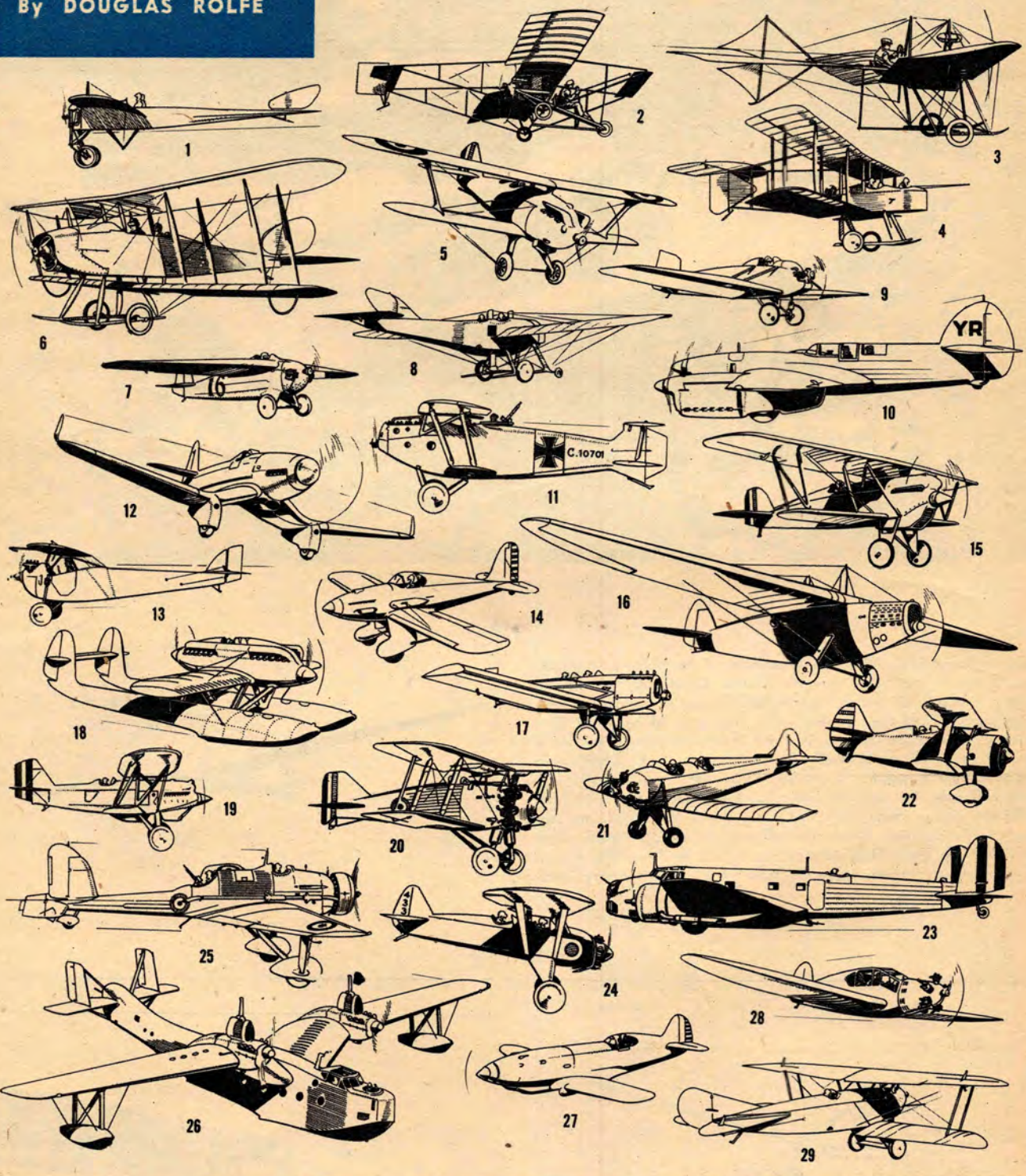
Above: Fairchild C-119H, newest member of the Flying Boxcar family. Wingspan has been extended to 148 ft. All fuel is carried in external wing tanks. Cargo capacity has also been greatly increased; can carry 27,200 lbs. Center right: the graceful sailplane is a Moswey IV from Switzerland, in which Swiss champion Rene Comte soared to 29,000 ft. in South Africa. Span is 47 ft. Glide angle 30 to 1, sinking speed 2 ft. per sec. Below left: Doman YH-31 military helicopter for which an order has been placed by the military with the Doman Helicopters, Inc. Capacity is for six, can be converted as ambulance. Below right: Piper L-21 military liaison plane. Basically the Super-Cub, powered by a 125 hp Lycoming engine. Landing gear permits operation from very rough-'n'-ready fields.

AIR PROGRESS

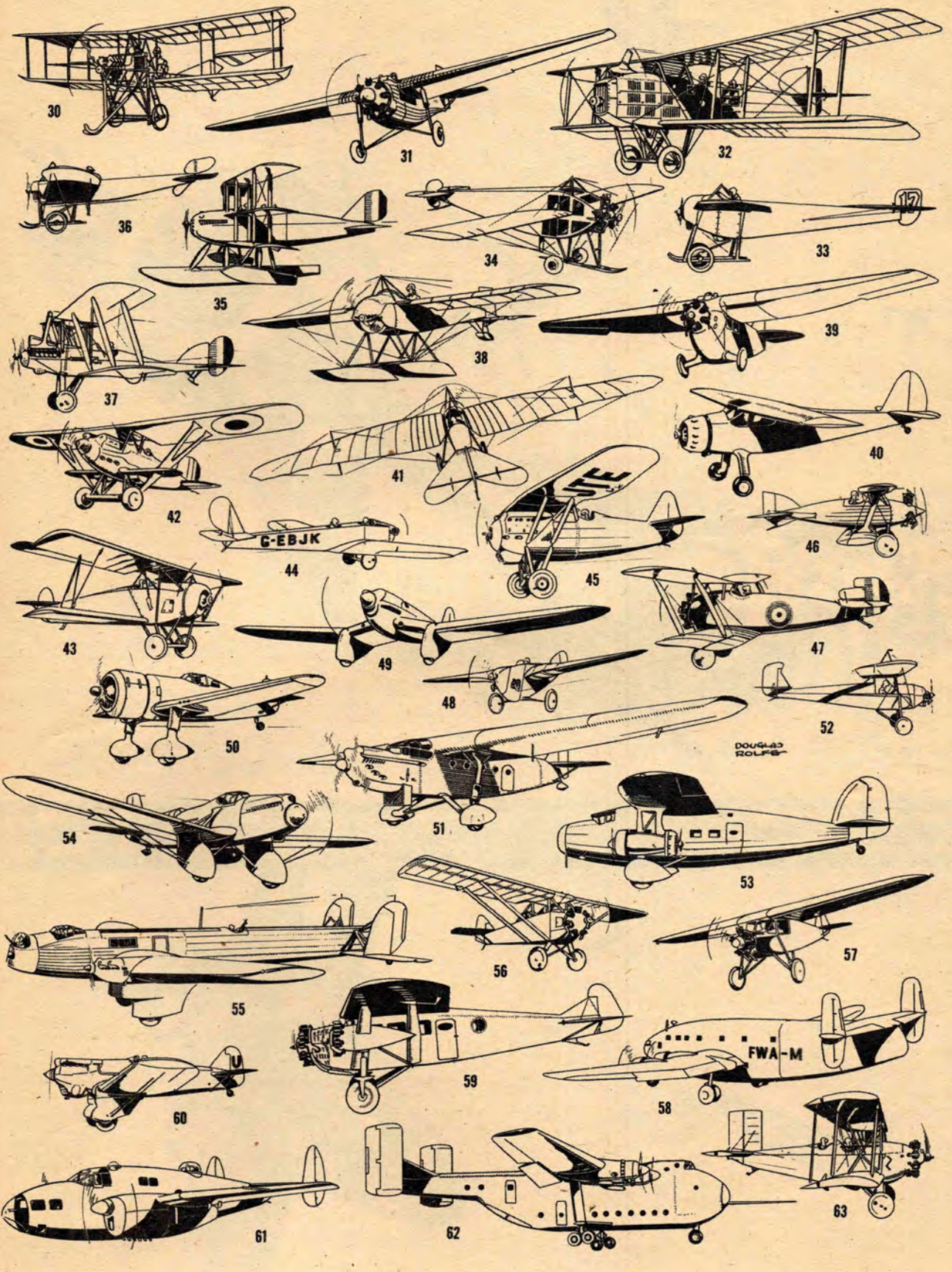
By DOUGLAS ROLFE

IDENTO-QUIZ

Are you a plane spotter from way back? Here's a test for experts. Write out answers, then check below. Score of 60 or more: excellent; 50 or more: good; 40 or more: not bad; under 40: well . . .



1. Bleriot, 1911, Fr.; fish-tailed Bleriot, side-by-side seats. 2. Walden, 1910, U. S. A.; first successful U. S. monoplane. 3. Fokker, 1910, Hol.; first successful Fokker. 4. Vickers F.B. 5, 1913, G. B.; prototype model Vickers "Gun Bus." 5. Breguet XIX. 1924, Fr.; 400 hp Lorraine-Dietrich. 6. B.E. 3, 1913, G. B.; The "Bloater," a bad B.E. design. 7. Heath Tomboy, 1924, U. S. A.; winner Aero Digest Cup. 8. Bristol Military, 1912, G. B. 9. Avia BH. 16, 1924, Czechoslovakia. 10. Bellanca, 1937, U. S. A.; specially built for N. Y.-Paris flight. 11. Hannoveraner, 1918, Ger.; 2-seat fighter, 180 hp Argus. 12. Blohm & Voss Ha 137, 1937, Ger.; dive bomber, 680 hp Junkers Jumo. 13. Driggs Dart, 1923, U. S. A.; Converted Henderson motorcycle engine. 14. Curtiss, 1932, U. S. A.; first low-wing Curtiss pursuit type. 15. Boeing PW-9c, 1926, U. S. A., 430 hp Curtiss D-12. 16. Bleriot 110, 1930, Fr.; 600 hp Hispano-Suiza, long range. 17. Farman Sport, 1930, Fr.; 90 hp Renault. 18. Dornier, 1927, Ger.; Schneider Cup entrant, two 1,000 hp. 19. Curtiss Hawk, 1926, U. S. A., first Air Corps fighter designated P-20. Gloster Grebe, 1925, G. B.; standard R.A.F. pursuit. 21. Barling NB4-L, 1929, U. S. A.; 90 hp Lambert radial, 3-place. 22. Chato, 1937, Russia; used in Spanish civil war by Loyalists. 23. Fiat B.R. 20, 1937, It.; 2 Fiat 1,000 hp A-80s. 24. Doyle Oriole, 1929, U. S. A.; 65 hp LeBlond radial. 25. Handley-Page, 1935, G. B.; all-metal 680 Bristol Pegasus. 26. Short R. 24131, 1935, G. B. 27. Curtiss P-37, 1939, U. S. A.; immediate predecessor of P-40 series. 28. Eaglerock Bullet, 1929, U. S. A.; early approach to 4-place pers. plane. 29. D.F.W., 1913, Ger.; world's long-distance record breaker. 30. Dufaux, 1910, Switzerland; first successful Swiss airplane. 31. Hamilton, 1928, U. S. A.; McDonnell design



(pre-Akerman). 32. Breguet 14B, 1918, Fr.; notable for flaps on lower wings. 33. Nieuport-Sabelli, 1911-12, Fr.-It.; modified version of reg. design. 34. Avro, 1912, G. B.; experimental cabin mid-wing. 35. Curtiss 18T, 1923, U. S. A.; winner Curtiss Marine Trophy. 36. Bristol-Prier, 1911, Fr.-G. B.; 1st Bristol monoplane. 37. R. A. F.* BE-12, 1917, G. B.; single-seat version of B.E. powered with 140 hp V-12. 38. Borel, 1913, Fr.; first torpedo plane. 39. Focke-Wulf, 1924, Ger. 40. Cessna, 1935, U. S. A.; prototype model C-145. 41. Handley-Page, 1913, G. B. 42. Nieuport-Delage, 1932, Fr. 43. Fokker S. 11, 1921, Hol.; side-by-side 2-seat trainer. 44. Bristol Brownie, 1922, G. B.; 20 hp Bristol Cherub. 45. Dewoitine, 1930, Fr. 46. Lincoln Sport, 1922-23 U. S. A.; 35 hp Anzani radial. 47. Sopwith 8F-1 (Snail), 1919, G. B.; 180 hp A.B.C. Wasp radial, all-wood monocoque fuselage. 48. R.A.E. Hurricane, 1923, G. B.; ultra-light cantilever monoplane. 49. Supermarine S.7130, 1936, G. B.; note resemblance to Blohm & Voss (12). 50. Fokker D-21, 1937, Hol. 51. Ford Express-Mailplane, 1930, U. S. A.; 650 hp Hispano-Suiza. 52. Long Longster, 1932, U. S. A.; variously powered. 53. Dornier Do.K, 1932, Ger.; 4 240 hp Walter radials. 54. Curtiss A-8, 1932, U. S. A. 55. Fairey Hendon, 1935, G. B.; long-range heavy bomber. 56. Fiat A.S.1, 1929, It.; 85 hp Fiat A-50 radial. 57. Kari Keen Coupe, 1930, U. S. A. 58. Breguet Br. 761, 1948-49, Fr.; fast, heavy freightplane. 59. Bach Air Yacht, 1930, U. S. A. 60. Kawasaki C.5, 1934, Japan; 800 hp Kawasaki VIII. 61. Fairchild XAT-14, 1942, U. S. A.; Duramold construction. 62. Bristol Freighter, 1951, G. B.; 4-wheel truck landing legs. 63. Curtiss Lark, 1926, U. S. A.; square lines resemble Farman.
(*"R.A.F." here stands for "Royal Aircraft Factory.")

Crusaders in G-suits

If and when Vought Cutlass is pitted against Red jet fighters, this may, very well, be plight of vaunted Russian MiG-15s. Two Grumman Panthers off carrier tackle Commie Il-16 four-jet bomber, firing its fuel tanks with shots from 20-mm guns.

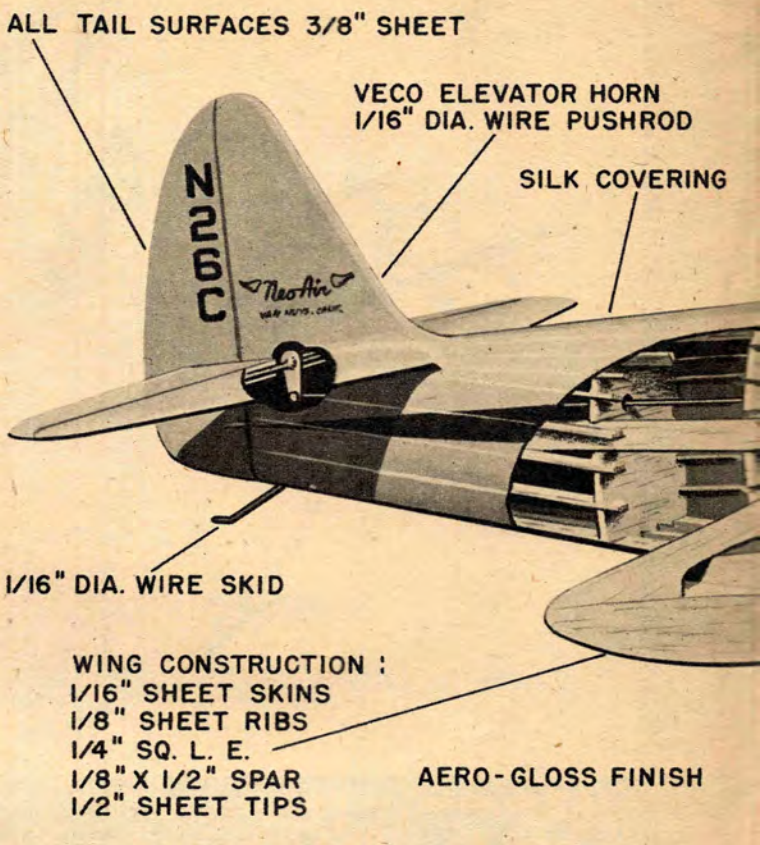
An ace in the making: USAF F-86 Sabre pilot flames MiG-15 above Korean cloud cover. These paintings all by Alfred Owles.

F-86s against MiG-15s. Though Chinese have superiority in numbers, we excel them in pilot skill and technical know-how.

AMERICA'S TOP MIDGET RACER:

Shoestring

Right from the design drawings, this U-control flying scale's accuracy is something to rave about. Let's go, men!



By S. CALHOUN SMITH

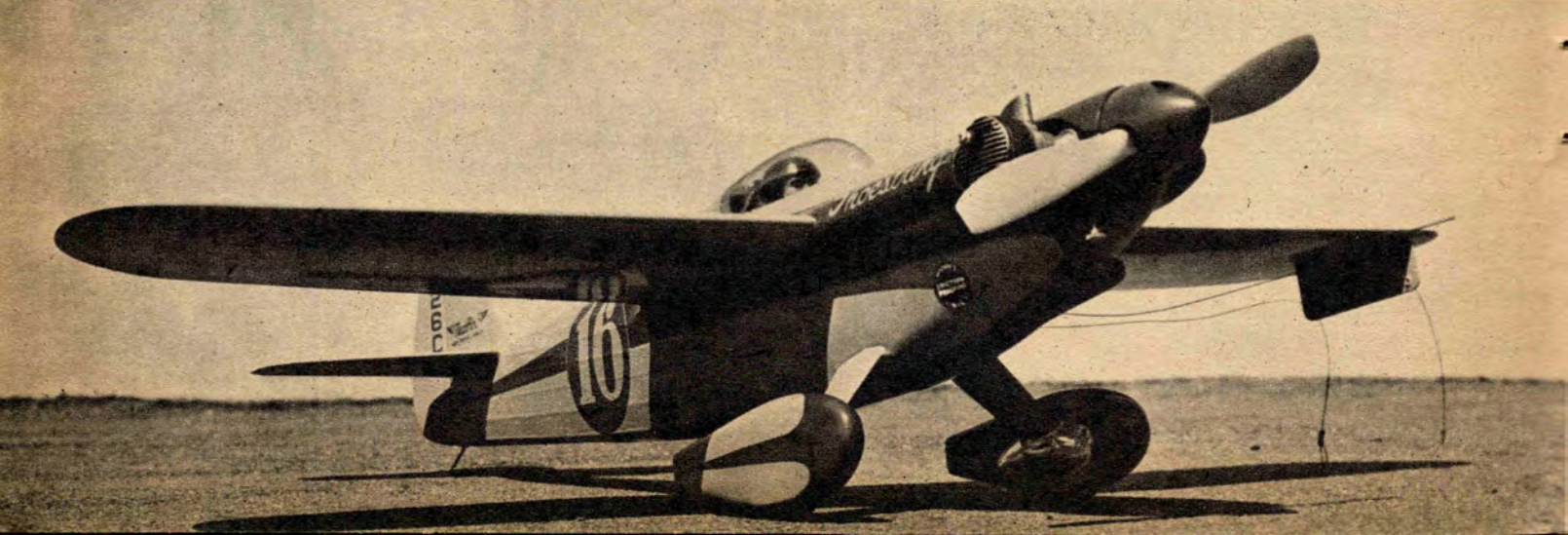
■ Since the inauguration of the Midget racing class in 1947 under Goodyear sponsorship, the basement-built pylon polishers have shown remarkable progress in design and performance. Race speeds have jumped from 165 mph (1947) to 200 mph, and the airplanes themselves have demonstrated the high degree of craftsmanship and ingenuity of the individual builders in gaining so much performance from the 85 hp Continental engine.

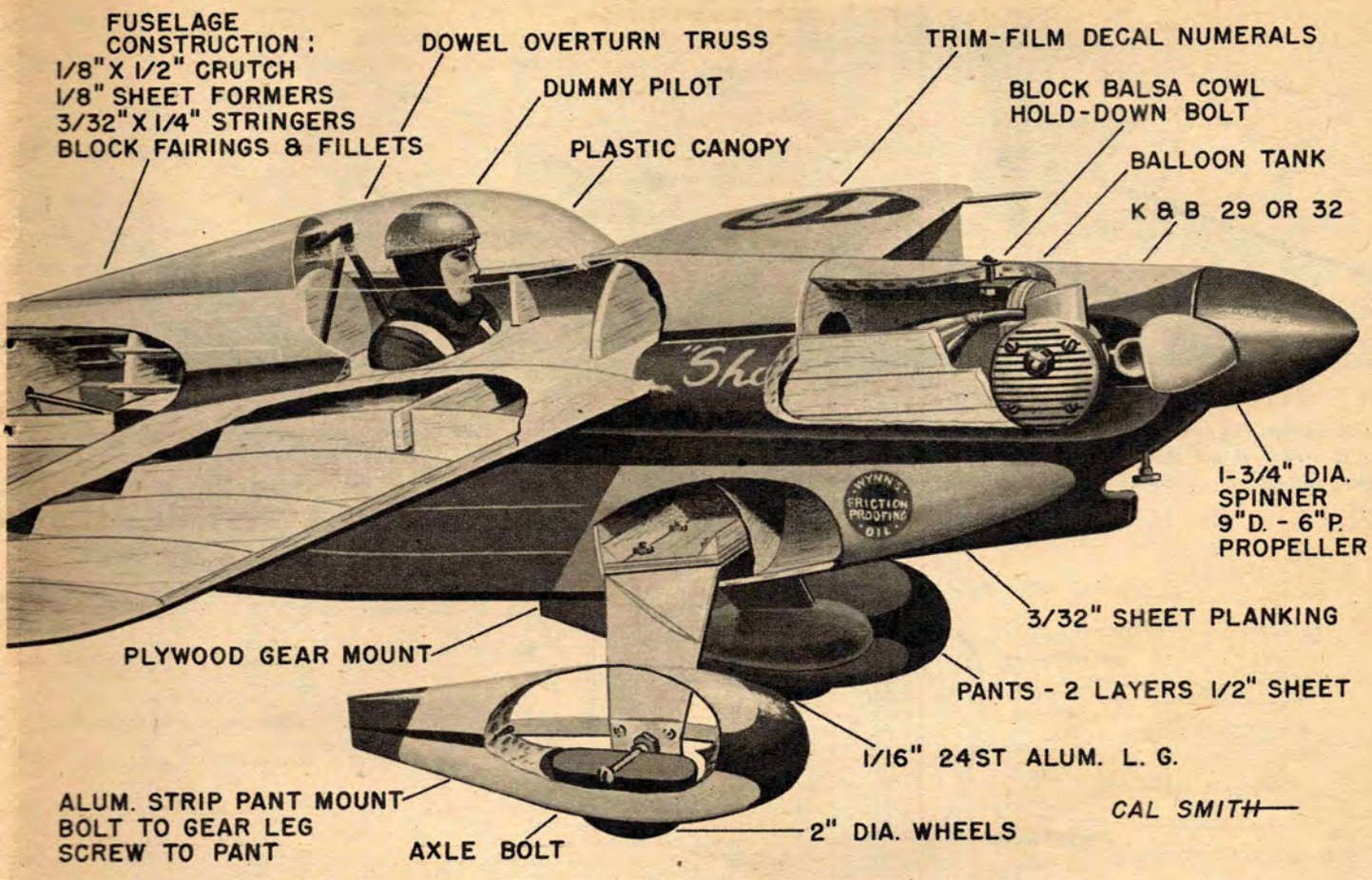
Now sponsored by Continental Motors, the midget races held in Detroit in September 1951 saw *Shoestring* a second-time winner of the big prize.

Pilot John Paul Jones, from Van Nuys, Calif., turned in the highest qualifying speed of 197.2 mph, and flew the race to win at an average speed of 199.778 mph. Which meant that some of the laps flown were well over 200 mph. Equal credit must be given to both pilot and airplane designer. Jones flew the course like clockwork, emphasizing the value of precision flying as a race-winning factor. Rodney Kreimendahl, designer of *Shoestring,* turned out a beautiful design with much attention given to the other race-winning factor—cleanness.

The ship is a high mid-wing with engine fairing following through into the wing fillet—the most desirable arrangement. All flying surfaces are filleted well into the fuselage. The flat-plate Cessna-type landing gear has a generous fairing, and the wheel pants are relatively large, making for good streamlining of the chubby wheels. The bottom of the oil tank is shaped to lie flush with the lower cowling line, and external fins are welded directly to the tank to aid in oil cooling.

If it wasn't for that K&B engine and control line guide, you'd swear this is the full-scale Shoestring. Ain't she a mighty purty job?





A reworked Macauley metal racing prop is used and engine exhaust stacks are pointed rearward for the small advantage gained by jet action of exhaust gases. The overall impression of the airplane can only be described as "solid." Proportions, moment arms, and aspect ratios are all sensible, straightforward and honest. Span is 19 ft., length is 17 ft. 9 in.

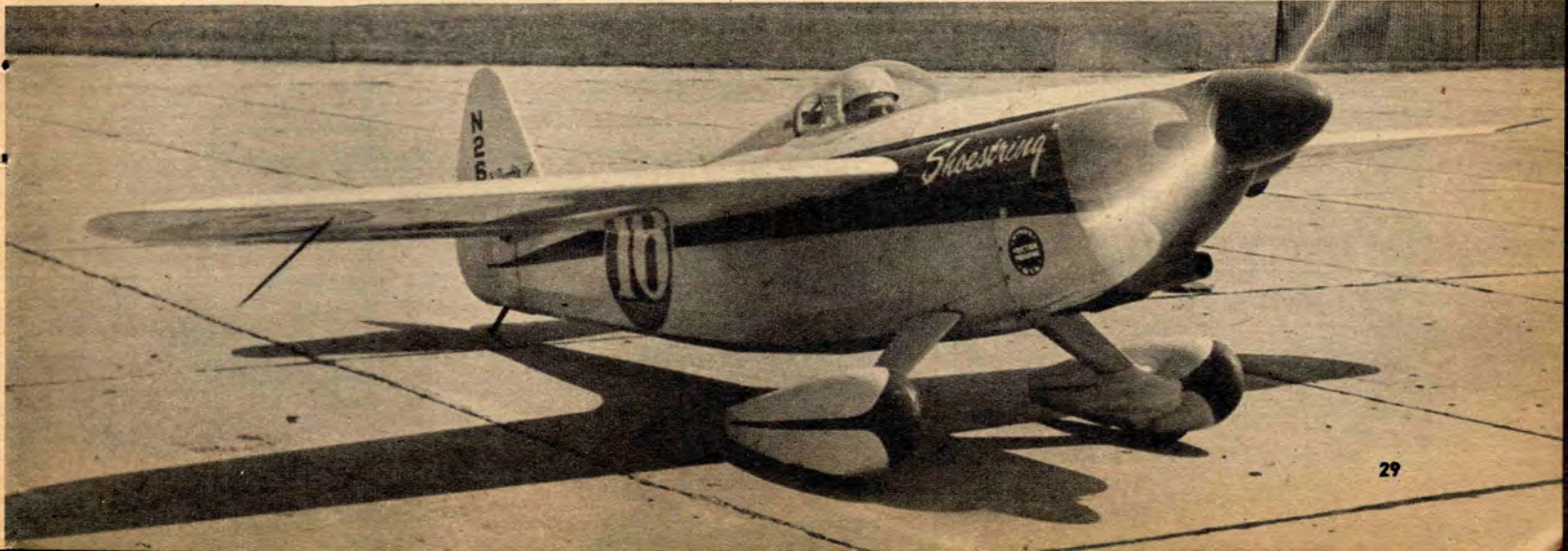
The little speedster has welded steel tube fuselage, stringered and fabric covered, with all-wood plywood covered wing and tail surfaces. Engine fairings, cowl, struts and pants are aluminum. The most outstanding feature of the airplane is the finish. The color scheme is a bright chartreuse and fire-engine red, rubbed down and waxed to the highest gloss seen at the races. You can barely stand to look at the ship in the sunlight!

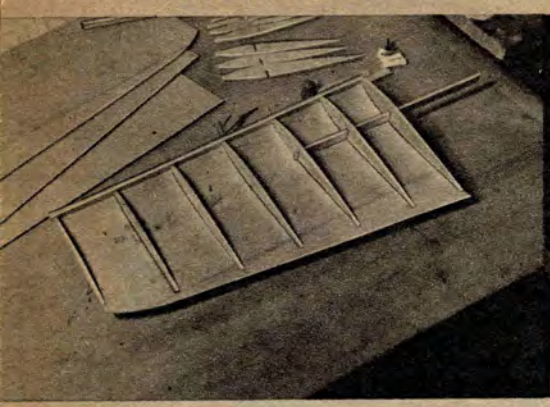
Modeling *Shoestring* is a natural for flying scale. The plans presented are scaled directly from accurate three-view drawings supplied by the designer. The odd scale of 1¾" = 1' was chosen so the ship would have a reasonable size and wing loading. Every effort was made to keep the construction light so good flight performance would result.

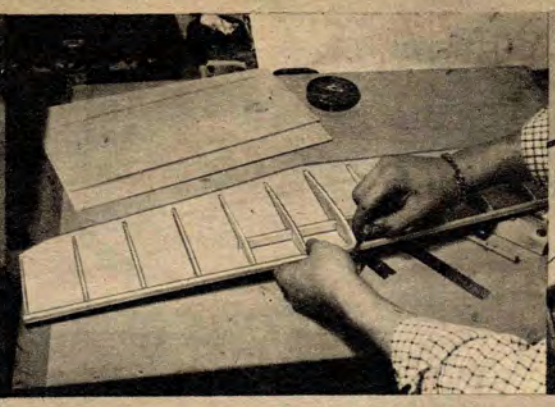
Span of the model is 33" and length 31". Wing area is 200 sq. in. and weight 28 oz., giving a wing loading of 14 oz./100 sq. in. With the K&B .32 engine the ship really moves and the symmetrical airfoil permits some stunting, although the ship is not light enough to compete as a pure stunt model. The symmetrical wing is the main departure from scale on the model.

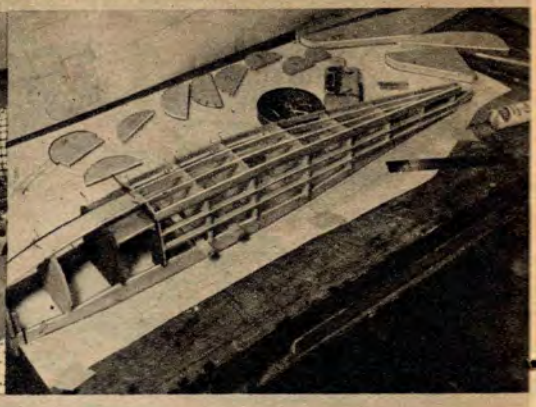
Construction details on full-size plans available.

Shoestring spans a mere 19 feet, yet flies at more than 200 mph! Sleek Continental racer took top honors at two National Air Races.





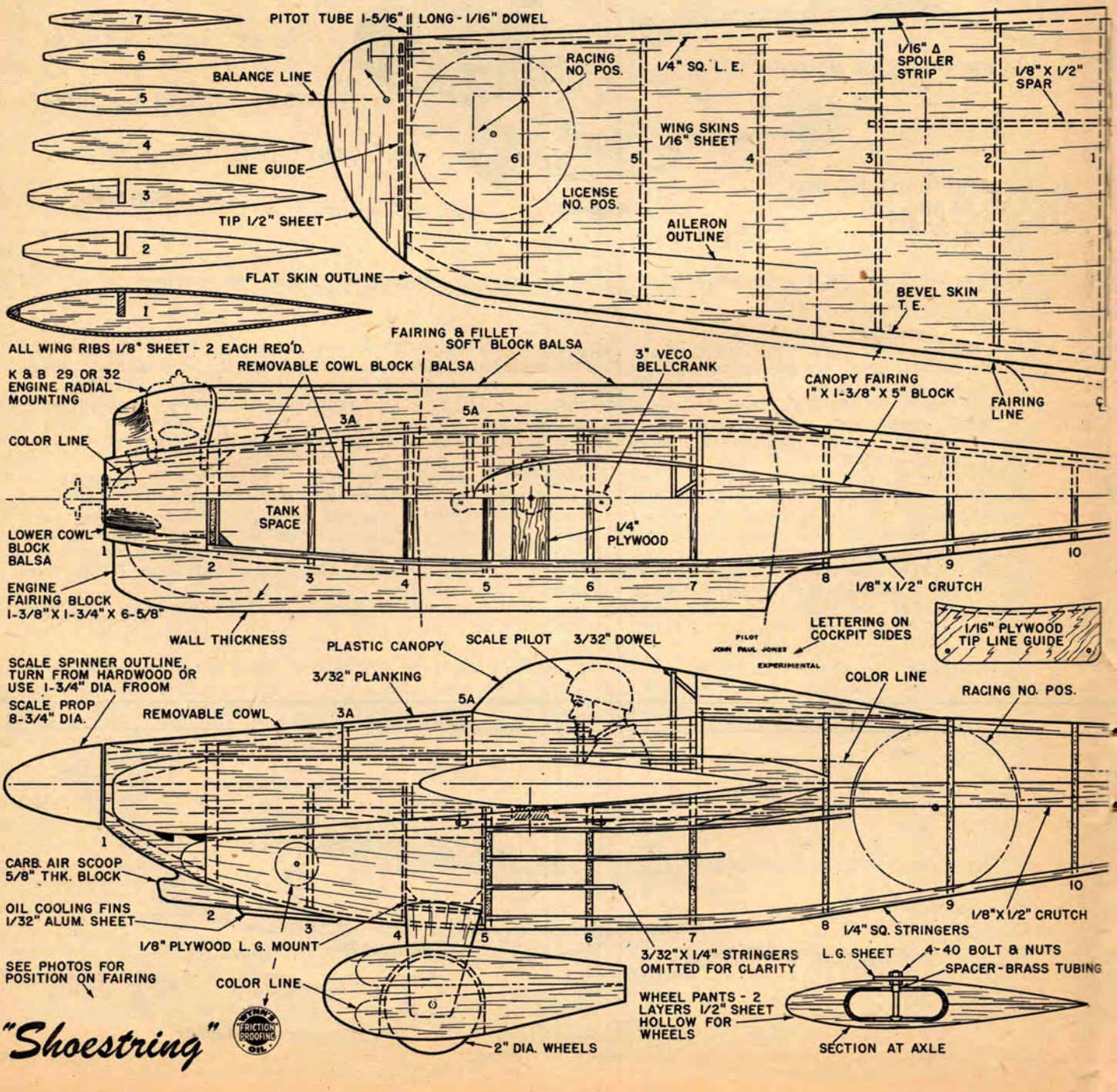




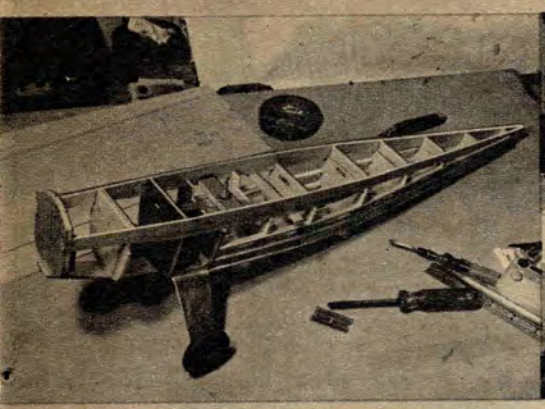
Construction begins when you lay out wing skins; cut out ribs, cement to skin; add L.E.; repeat for other wing.

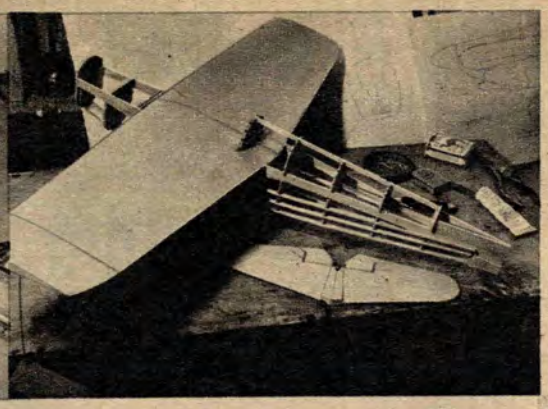
Next step is to bevel the leading and trailing edges; put wing skins in place, pin to ribs and leading edge; tape the trailing edge into position.

Build fuselage crutch upside down over the plan top view; add the formers, bottom halves and the stringers. Then let dry.


PITOT TUBE 1-5/16" LONG - 1/16" DOWEL
BALANCE LINE
LINE GUIDE
TIP 1/2" SHEET
FLAT SKIN OUTLINE
RACING NO. POS.
1/4" SQ. L. E.
1/16" Δ SPOILER STRIP
1/8" X 1/2" SPAR
WING SKINS 1/16" SHEET
LICENSE NO. POS.
AILERON OUTLINE
BEVEL SKIN T. E.
FAIRING LINE
ALL WING RIBS 1/8" SHEET - 2 EACH REQ'D.
FAIRING & FILLET
SOFT BLOCK BALSA
REMOVABLE COWL BLOCK
BALSA
3" VECO BELLCRANK
K & B 29 OR 32 ENGINE RADIAL MOUNTING
CANOPY FAIRING 1" X 1-3/8" X 5" BLOCK
COLOR LINE
TANK SPACE
1/4" PLYWOOD
LOWER COWL BLOCK BALSA
ENGINE FAIRING BLOCK 1-3/8" X 1-3/4" X 6-5/8"
1/8" X 1/2" CRUTCH
WALL THICKNESS
LETTERING ON COCKPIT SIDES
1/16" PLYWOOD TIP LINE GUIDE
PLASTIC CANOPY
SCALE PILOT
3/32" DOWEL
SCALE SPINNER OUTLINE, TURN FROM HARDWOOD OR USE 1-3/4" DIA. FROOM
3/32" PLANKING
SCALE PROP 8-3/4" DIA.
REMOVABLE COWL
COLOR LINE
RACING NO. POS.
CARB. AIR SCOOP 5/8" THK. BLOCK
OIL COOLING FINS 1/32" ALUM. SHEET
1/8" PLYWOOD L. G. MOUNT
1/8" X 1/2" CRUTCH
1/4" SQ. STRINGERS
3/32" X 1/4" STRINGERS OMITTED FOR CLARITY
L.G. SHEET
4-40 BOLT & NUTS
SPACER - BRASS TUBING
SEE PHOTOS FOR POSITION ON FAIRING
COLOR LINE
WHEEL PANTS - 2 LAYERS 1/2" SHEET HOLLOW FOR WHEELS
2" DIA. WHEELS
SECTION AT AXLE

"Shoestring"

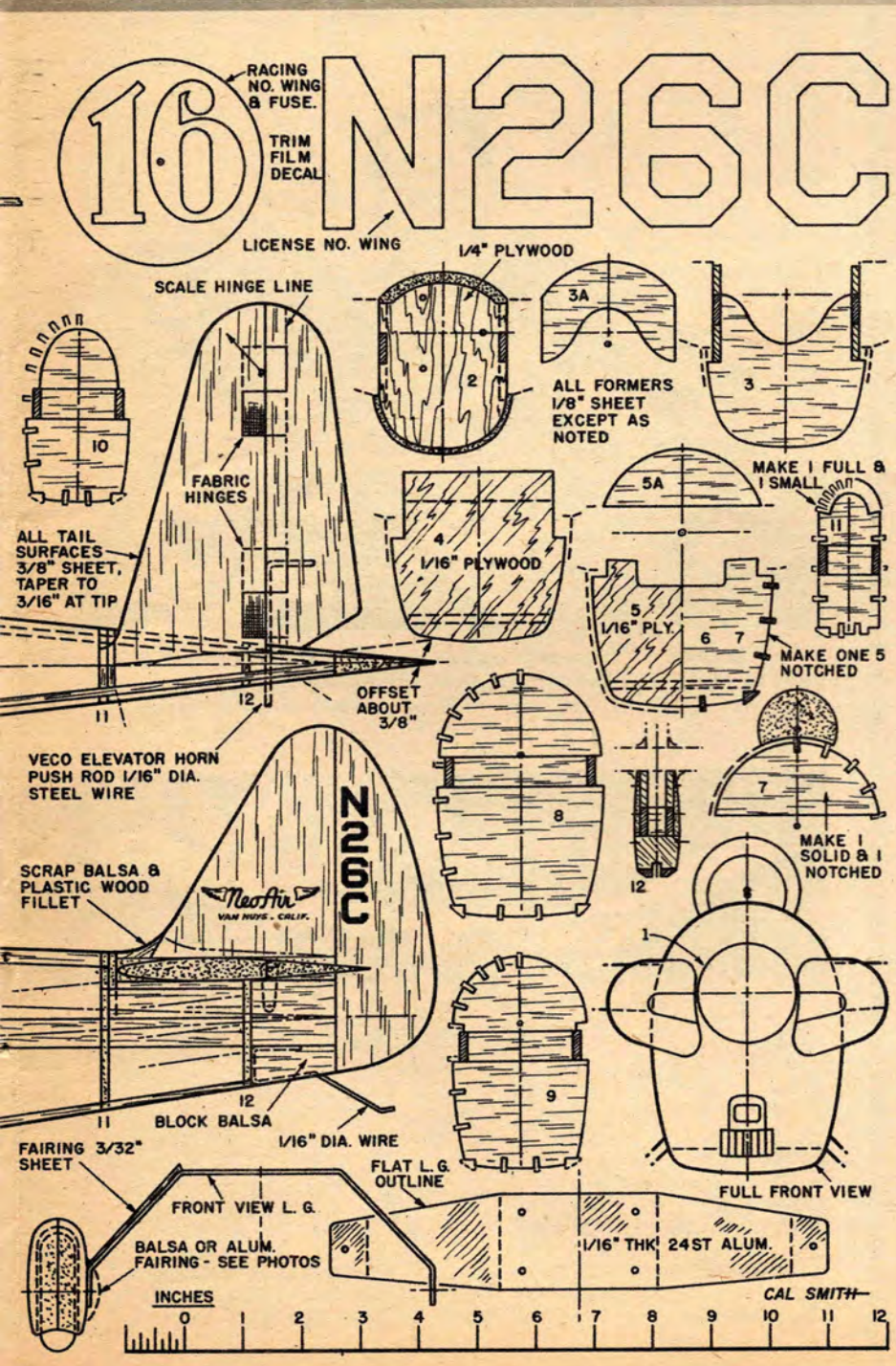


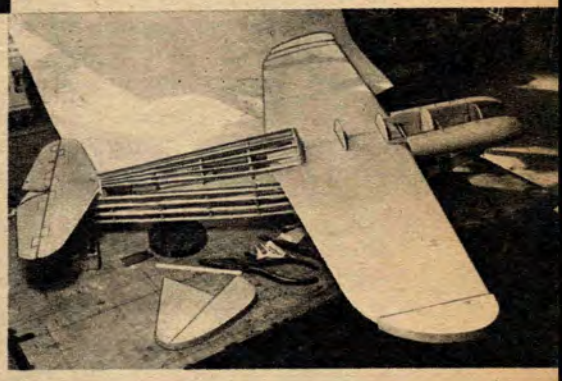


This flying scaler is no project for the novice; but Joe "Average" Modeler can turn out a super copy in this manner

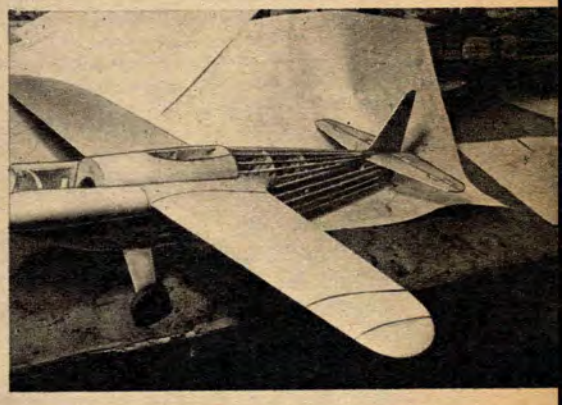
Take fuselage off board; make the landing gear and install; add the bellcrank, control line lead-outs as well as pushrod.

Glue the wing in permanent position, add the top formers; build up the stabilizer platform and also skid block; make the horizontal tail.

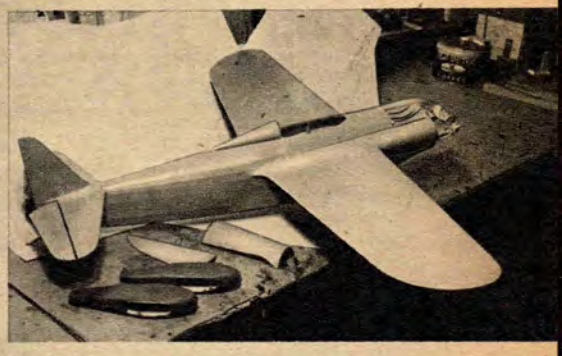

16 N26C
RACING NO. WING & FUSE.
TRIM FILM DECAL
LICENSE NO. WING
SCALE HINGE LINE
1/4" PLYWOOD
3A
ALL FORMERS 1/8" SHEET EXCEPT AS NOTED
FABRIC HINGES
ALL TAIL SURFACES 3/8" SHEET, TAPER TO 3/16" AT TIP
1/16" PLYWOOD
5A
MAKE 1 FULL & 1 SMALL
1/16" PLY.
MAKE ONE 5 NOTCHED
OFFSET ABOUT 3/8"
VECO ELEVATOR HORN PUSH ROD 1/16" DIA. STEEL WIRE
N26C
SCRAP BALSA & PLASTIC WOOD FILLET
MAKE 1 SOLID & 1 NOTCHED
BLOCK BALSA
1/16" DIA. WIRE
FAIRING 3/32" SHEET
FLAT L.G. OUTLINE
FULL FRONT VIEW
FRONT VIEW L. G.
BALSA OR ALUM. FAIRING - SEE PHOTOS
1/16" THK 24ST ALUM.
CAL SMITH
INCHES
0 1 2 3 4 5 6 7 8 9 10 11 12



Install the stabilizer; connect pushrod; add top stringers, and the top formers in front; rough carve, add engine fairings, tip blocks.



Add fin; build up tail fillets; plank the nose section; proceed to carve fillets for the wing, then complete wing tip carving.



Carve fin, pants and nose cowl; cover and prepare for doping; prime and fill all the surfaces; spray if it is at all possible.

guest editorial

OUT OF HOT-ROD, INTO CUB!

Remarkable response by aviation leaders to AT's "Jam on their Bread" message

■ In its July issue AIR TRAILS addressed a message to the "full-scale" aviation industry stressing the fact that most of America's large aircraft manufacturers have done little or nothing to encourage our air-interested youth. Here are a few excerpts from the many letters which have swamped the editorial staff:

"If there is any concerted movement on the part of aviation manufacturers to create some over-all nation-wide program, I am sure you will find Mr. Prewitt and the Prewitt Aircraft Company participating."—*Walter N. Connors, Public Relations Administrator, Prewitt Aircraft Co.*

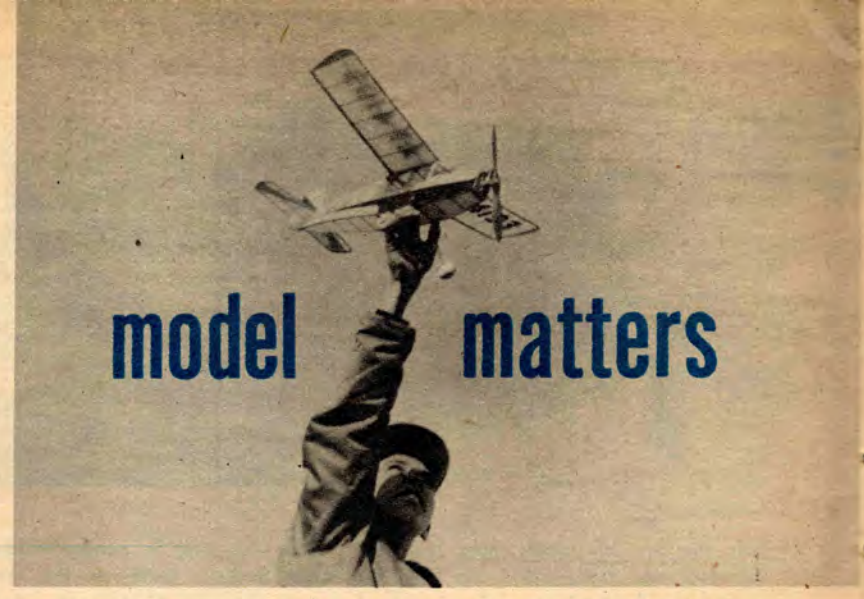
"You are to be commended for forcefully and clearly presenting the problem and a recommended solution—you may count on the Air Reserve Association of the United States for full support."—*A. B. McMullen, Executive Director, Air Reserve Association of the United States.*

> "If we are going to keep up with our responsibilities in the world, we must have a country that is air-minded. We must have more and more young people all the time who go into the business of flying. Consequently, I have been disturbed at the fact that there seems to be less interest in learning to fly during the last few years. Fewer permits are being issued to student pilots, and fewer licenses to private pilots. That is not good."
> —*Pres. Harry S. Truman at CAP dinner.*

"Some expensive solutions have been tried. Perhaps the obvious inexpensive solution should be tried, namely, to *help* our air youth develop in ways appropriate to his age continuously from early model plane building through later contest experiences with gas model planes and radio control flying, gliding and soaring, and either A&E mechanic training or collegiate aviation."—*Willis C. Brown, Specialist for Aviation Education, U. S. Office of Education.*

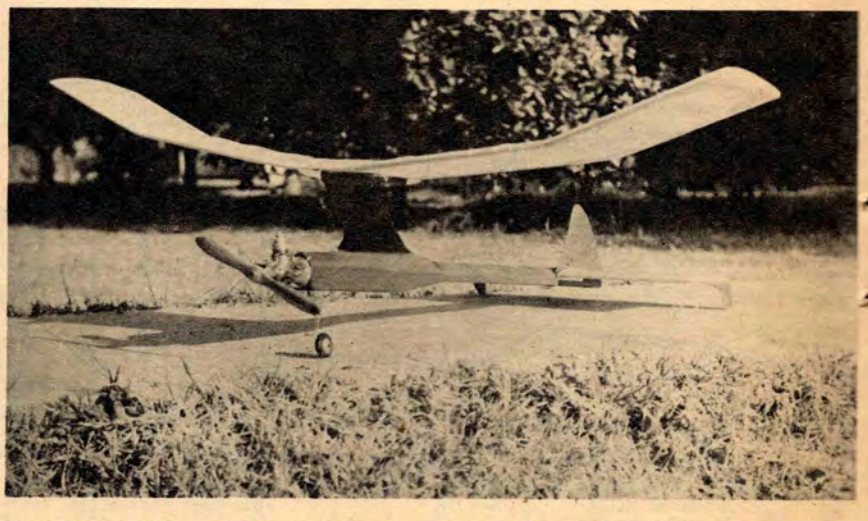
"Not the industry, but the hundreds of aviation organizations such as the trade association groups that make up the field of general aviation in the United States, together with all of the aviation committees of the home town trade boards and many hundreds of local and state aero clubs, must themselves realize that until they can unite in a common effort to speak out in a voice that can be heard, then we are not going to be very effective insofar as our influence on the industry and our government is concerned."—*Donald D. Webster, General Manager, National Aeronautical Association.* (*Continued on page 75*)

model matters



From Ephrata, Washington, way comes this fine shot of Gerald Ellison holding an "AT" Co-Ette built by Cluff Dilley (no puns, please, folks). Has OK CO_2, white covering, red trim. Both are members of new Columbia Basin Piston Poppers.

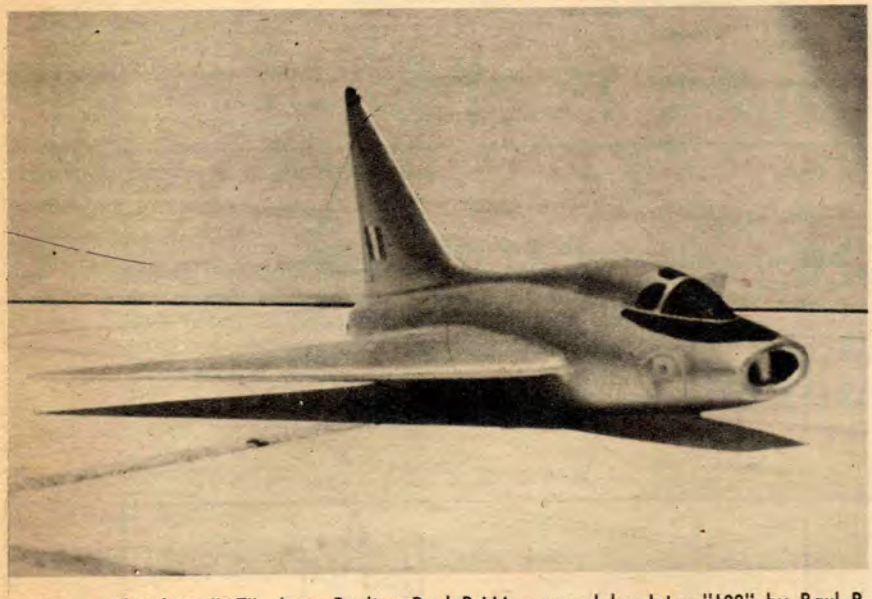
Two real beauties! Ballet dancer Diana Johnson, 18, red hair, with brother Denis' Trixter Barnstormer—both of Montreal. Denis reports the plane is powered by Fox .29, orange and gray color scheme. Photo by modeler Gilles Desrochers.



"Little Senator" from "AT" '52 Model Annual by A/1-C Jack L. McCutchen, 3602nd Maint. Sq. B-163, Luke AFB, Ariz. Reports hez had very pleasing results. AT still has some copies of both '51 and '52 Model Annuals: 50c each, by mail.

AT pays $5 for exclusive air model photographs used here.

Mrs. Paul W. Frisby of San Diego tells us of hubby's 6-foot Convair 240: C/L, 2 Super Cykes, 1100 hrs, abuilding, interior including: seats, instruments, carpeting, etc. Flaps, l.g., and engine controls worked by electric motors. Blinker lights.



Also from "AT" plans: Boulton Paul P-111 powered by Jetex "100" by Raul R. Muller, Florida, Argentina. Performs so nicely Raul enlarged the plans and has big one underway for Dyna-Jet. Jetex is at fuselage center, hatch lifts off lower side.

Club of the month: Branciforte Jr. High School Balsa Butchers, Santa Cruz, Calif. Guy Cochran, group's sponsor, is 3rd from left, rear row. The BJHSBB'ers meet Monday nights in the shop rooms. They've put on one U/C show for students.

so get those shutters warmed up and start in shooting!

the Prexy speaks

THIS ORGANIZED ACTIVITY

By FRANK B. BUSHEY
President, Academy of Model Aeronautics

■ In my book for 1952 the Academy has two boys deserving of any recognition the Academy can give; Walt Good who has finally achieved for us the 27¼ mc. radio license and Bill Fletcher who has put across the Wakefield participation for 1952. The work that these two fellows have done, the spirit that fostered their efforts and the sound thinking and persistence with which each has carried out his task is the stuff that makes the Academy.

Walt Good—Dr. Good—has been working for years with FCC to get for us the means of flying R/C without the smothering effect of the full "Ham" license. Time and again it has seemed as though the go-ahead signal was just around the corner —and the next moment achievement was further away than ever.

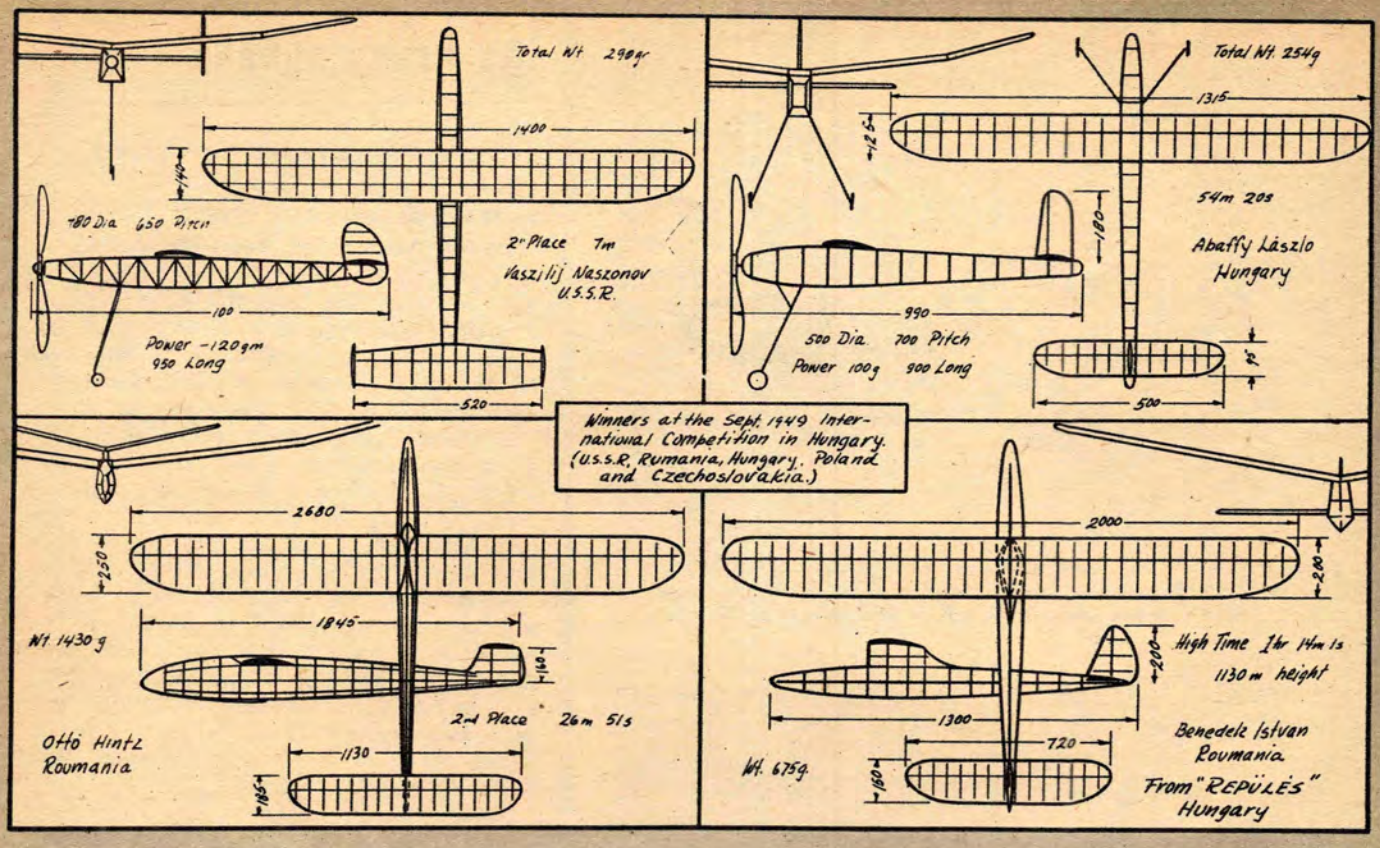
Walt could have given up years back with a clear conscience. But he's not made that way—any more than are the hundreds of guys who have been batting their heads against blank walls for years to get for us the things we need to keep model aviation free and up-to-date. Walt deserves our praise not only for the accomplishment but for the assurance that accomplishment gives to the rest of us for our own individual efforts.

Bill Fletcher had a different job to do. Equipped with boundless enthusiasm and plenty of drive, he set about to put the Wakefield participation on a sound and permanent financial basis. Sweat and tears have done the job. Backed by Ed Lidgard and Dick Everett, Bill has achieved his objective. Through the publication of a Wakefield Rules book subscribed by the model industry, our Wakefield Team will be in Sweden aiming to bring that cup back home.

It's good for us to know about Walt and Bill. On the local scene we are often so close to our own problems and difficulties and so far from any tangible help from the Academy that we get the idea we are working alone.

Walt and Bill are both unassuming. They would be the first to assure us of those hundreds of Academy members who are plugging just as hard, each in his own way —Warren Bartlett who is working from *our* side to make Plymouth contributions to model aviation sound aids to our growth; John Dooley, down in Tennessee, who has come up with an idea for getting a list of members available to us. Every one of us knows three or four fellows who do the work so the rest of us can benefit from model aviation.

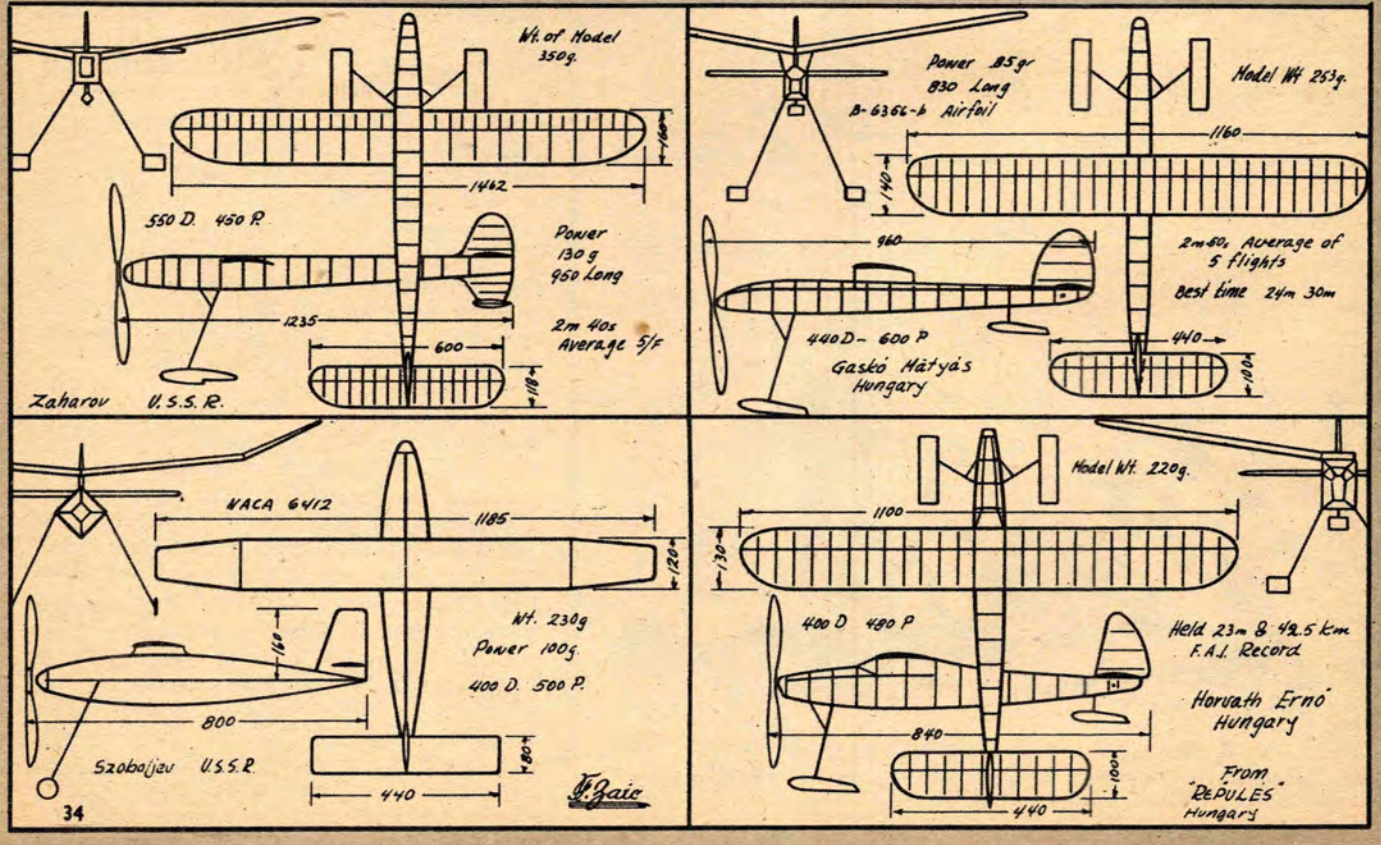
Again I say, hats off to Walt and Bill, two of the guys who work so you and I can fly for more fun and more prizes.

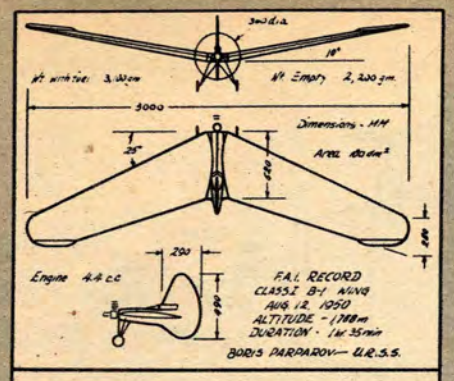


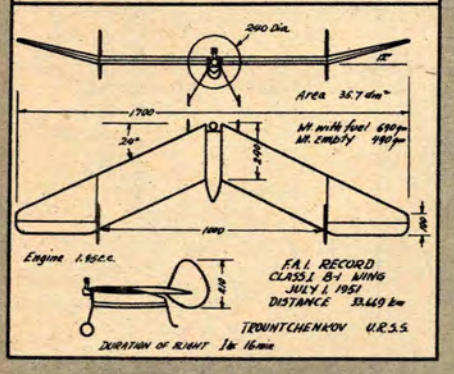
REVELATIONS IN THREE VIEW:

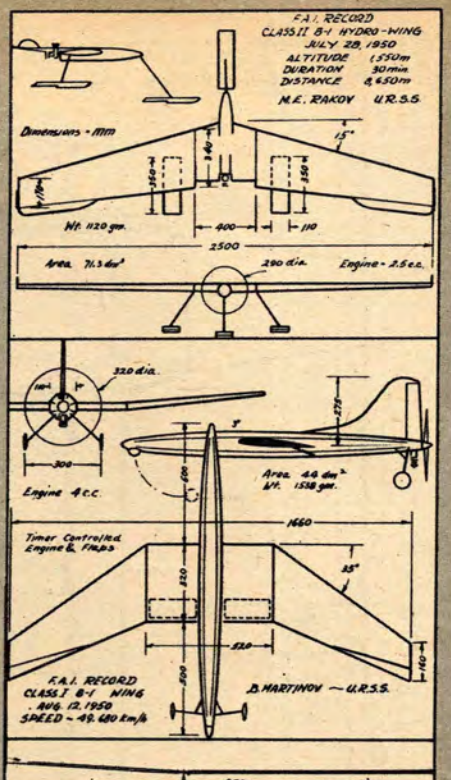
Behind the Iron Curtain

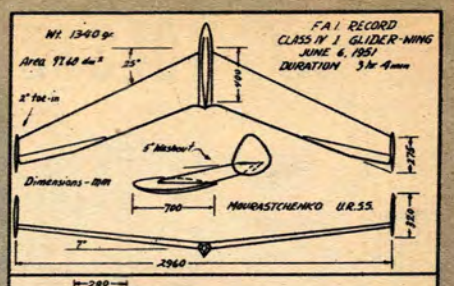
■ Although they hold many (F.A.I.) world's records, model builders behind the Iron Curtain erected by Russia and her satellites have been prevented from supplying data. In the new "Model Aeronautics Yearbook" ($2.50, Model Aeronautic Publications, Bx 333, Sta D NYC 3) are these interesting designs.

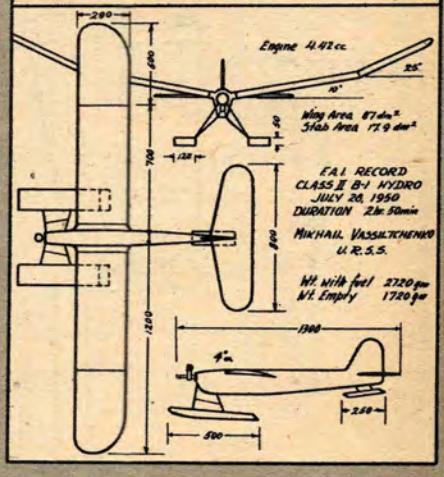




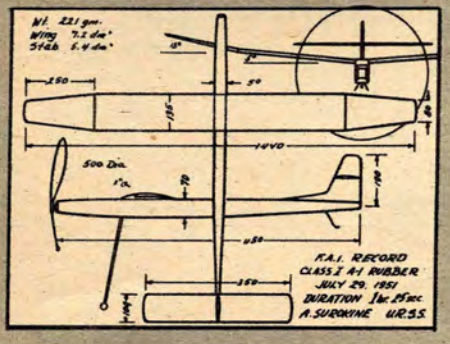


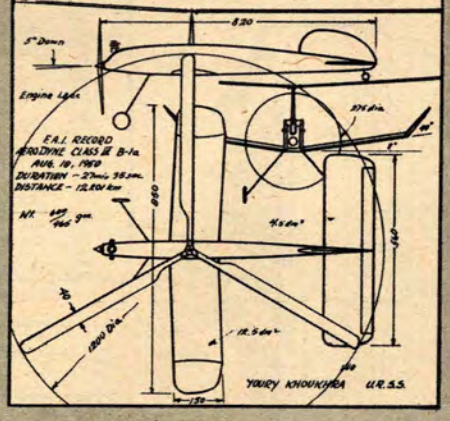


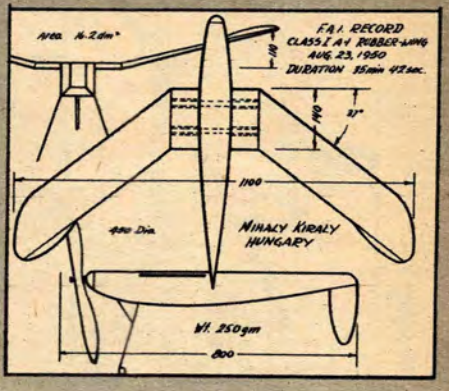


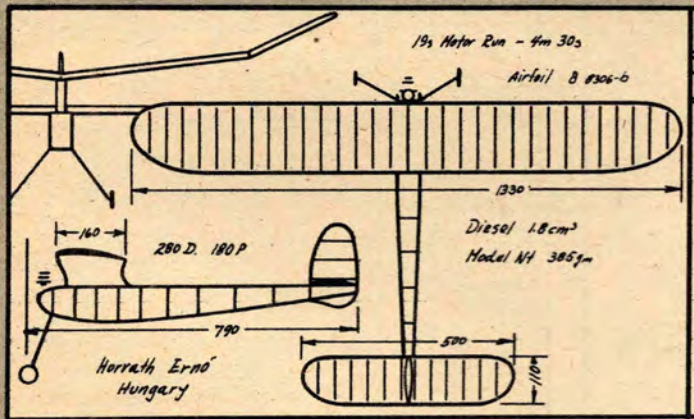


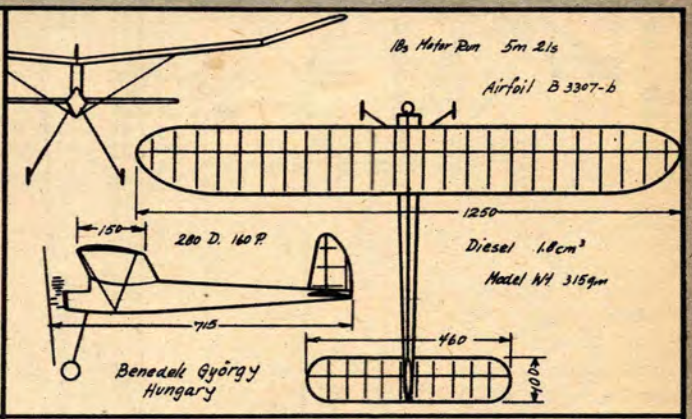
By FRANK ZAIC

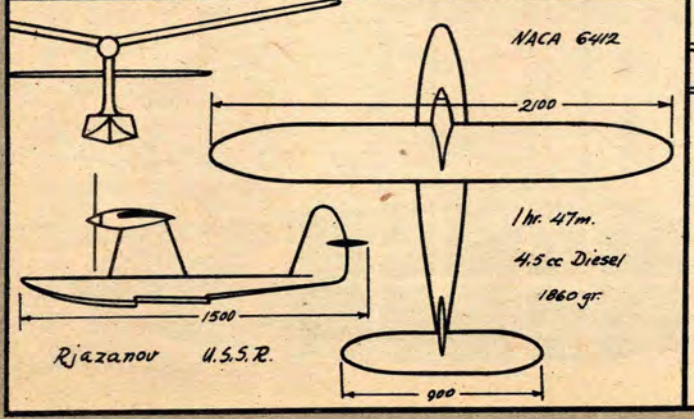


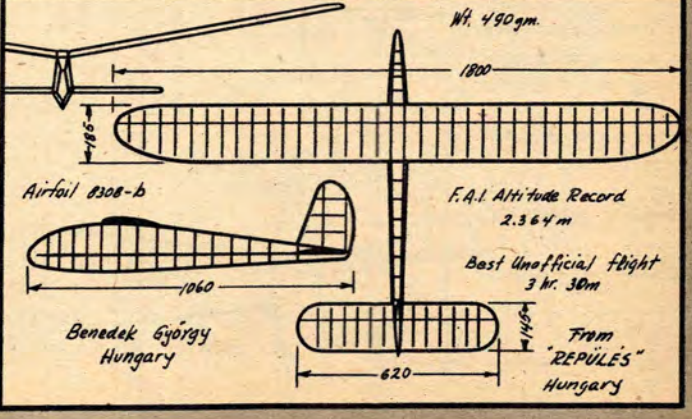








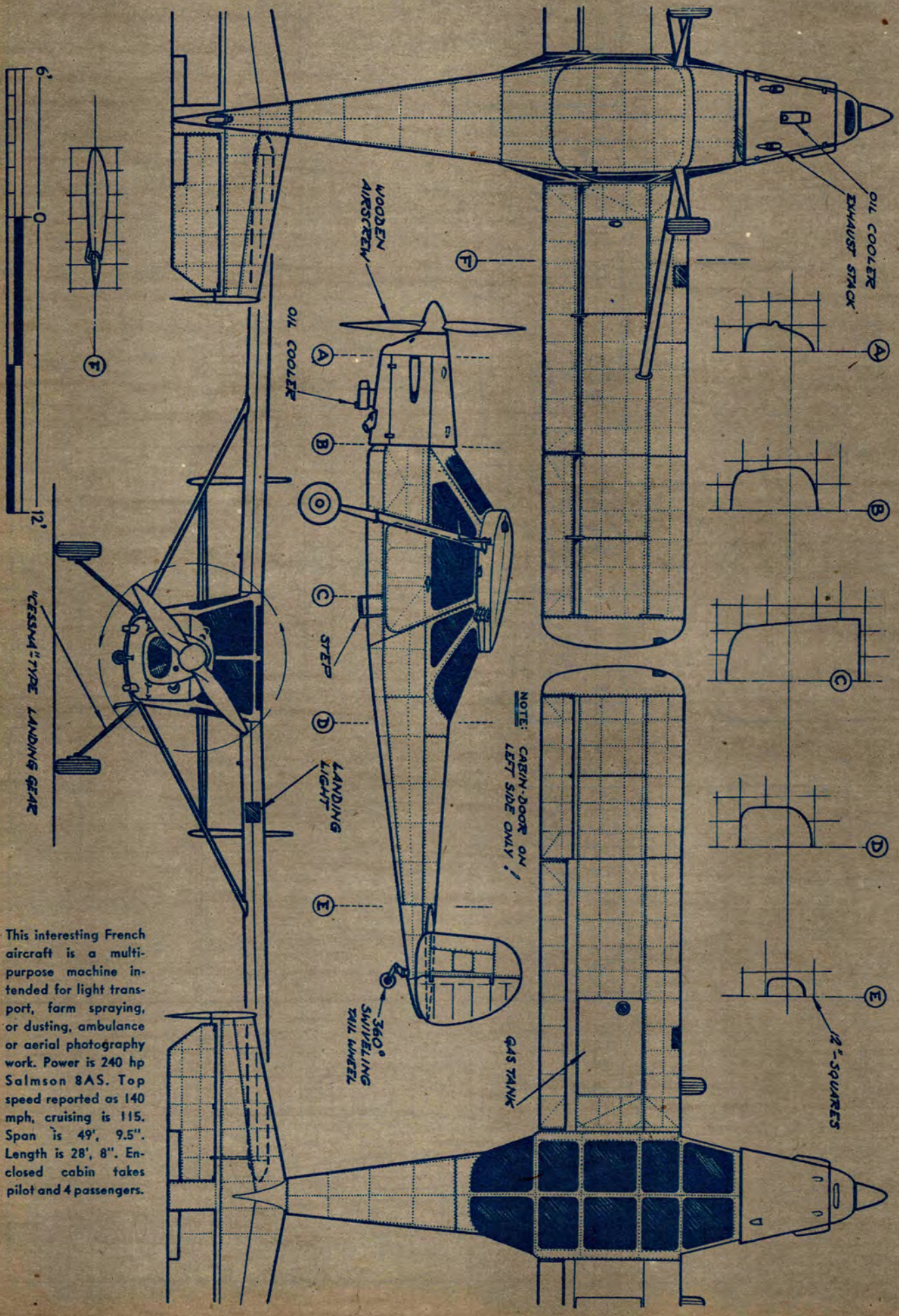




MAX HOLSTE MH-152

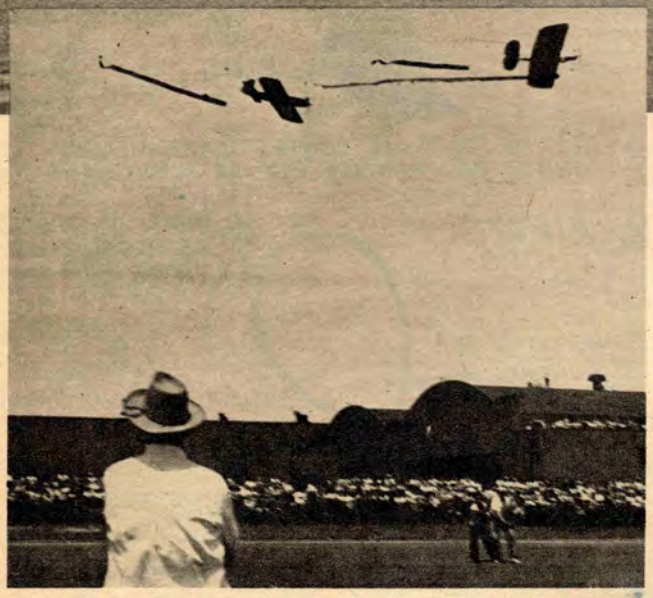
SCALE 3/16" = 1'0"

By BJORN KARLSTROM



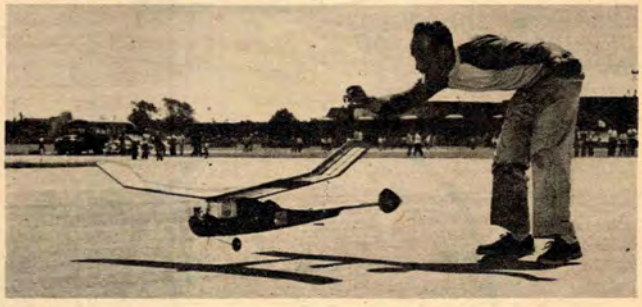
This interesting French aircraft is a multi-purpose machine intended for light transport, farm spraying, or dusting, ambulance or aerial photography work. Power is 240 hp Salmson 8AS. Top speed reported as 140 mph, cruising is 115. Span is 49', 9.5". Length is 28', 8". Enclosed cabin takes pilot and 4 passengers.

The Big City's BIG MEET



Combat flying and team racing provided thrills aplenty; Tom Deville, 19, of NYC, took top "dog fight" honors.

Each year the New York *Daily Mirror* conducts its Model Flying Fair; the '52 competition followed previous successes with 1,000 entrants, 250,000 spectators and $10,000 worth of awards. Models flew from 6 a.m. to 3 p.m., a full-scale air and auto show then entertained the crowd until the presentation of prizes at 5 p.m. Half the states in the country were represented, the Sleepless Knights club of Montreal came en masse. International record holder Gene (now "Airman") Stiles won Class A speed; Rod Jocelyn, 2-time U.S. aerobatic champ, performed in his modified Great Lakes—quite a meet indeed.



Sgt. Al St. Clair, Amarillo AFB, gets PAA-Load off; 21 AF'ers from Miss. and Texas competed, came in transport plane.

Beauty and flying scale events were many; here winners of Navy scale beauty: (from lt.) Frank Lashek, 1st, F9F; Raymond Carlin, 2nd, FJ-1; Alonzo Carver, 3rd, F8F. Lashek's job has Dyna-Jet.

AIR-MODEL MANUAL

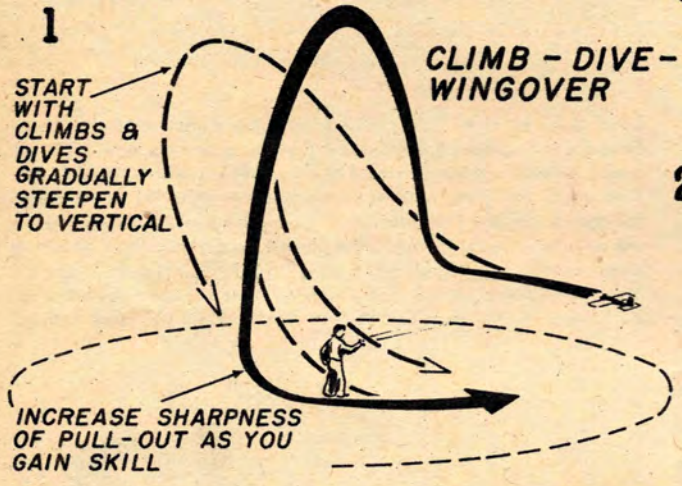
PRECISION AEROBATICS

PREFLIGHT CHECK

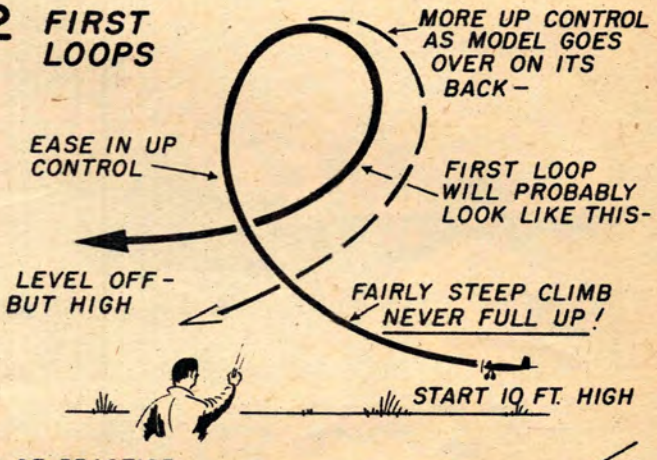
HAVE SHIP, ENGINE, PROP, TANK, WIRES, IN TOP FLYING CONDITION. TUNE ENGINE THEN HOLD MODEL UPSIDE DOWN TO CHECK PROPER RUNNING FOR INVERTED FLIGHT.

ASSUME THAT ALL CONTEST DAYS WILL BE WINDY – SO PRACTICE FLY ON WINDY DAYS TOO!

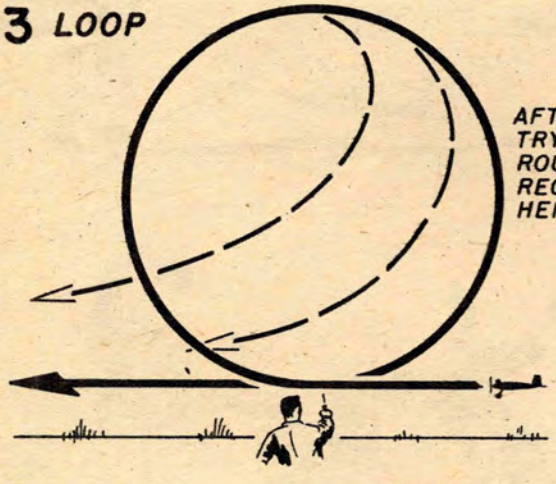
1 CLIMB – DIVE – WINGOVER



2 FIRST LOOPS

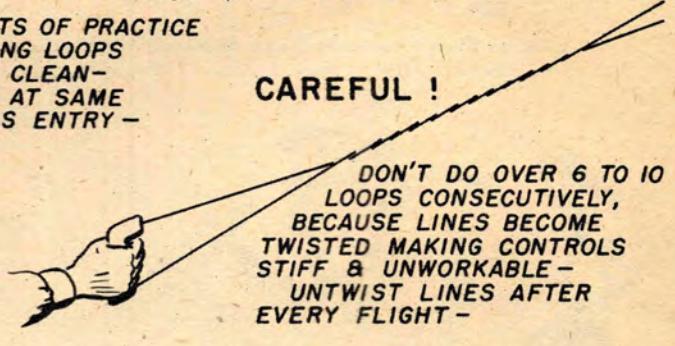

MORE UP CONTROL AS MODEL GOES OVER ON ITS BACK –
EASE IN UP CONTROL
FIRST LOOP WILL PROBABLY LOOK LIKE THIS-
LEVEL OFF – BUT HIGH
FAIRLY STEEP CLIMB
NEVER FULL UP !
START 10 FT. HIGH

3 LOOP



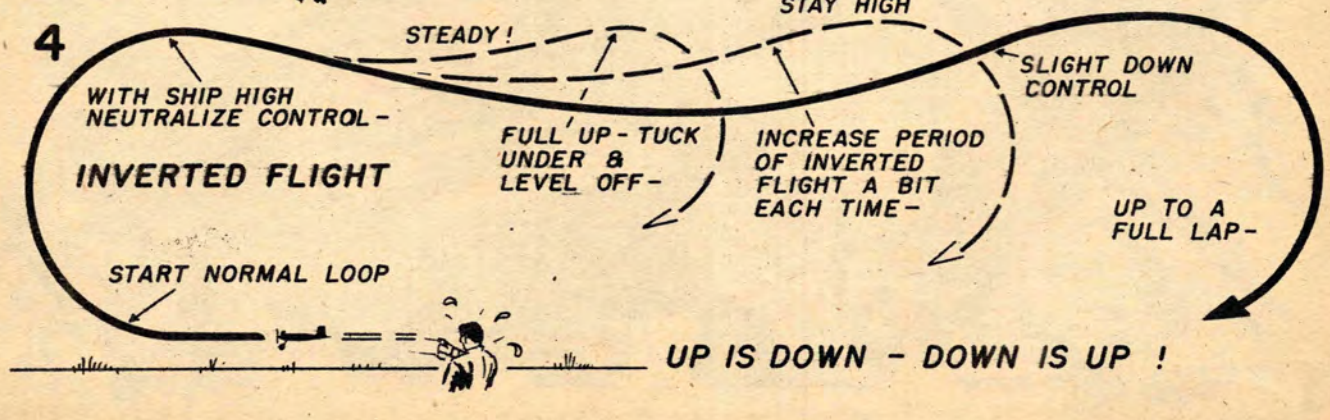
AFTER LOTS OF PRACTICE TRY MAKING LOOPS ROUND & CLEAN – RECOVER AT SAME HEIGHT AS ENTRY –

CAREFUL !



DON'T DO OVER 6 TO 10 LOOPS CONSECUTIVELY, BECAUSE LINES BECOME TWISTED MAKING CONTROLS STIFF & UNWORKABLE – UNTWIST LINES AFTER EVERY FLIGHT –

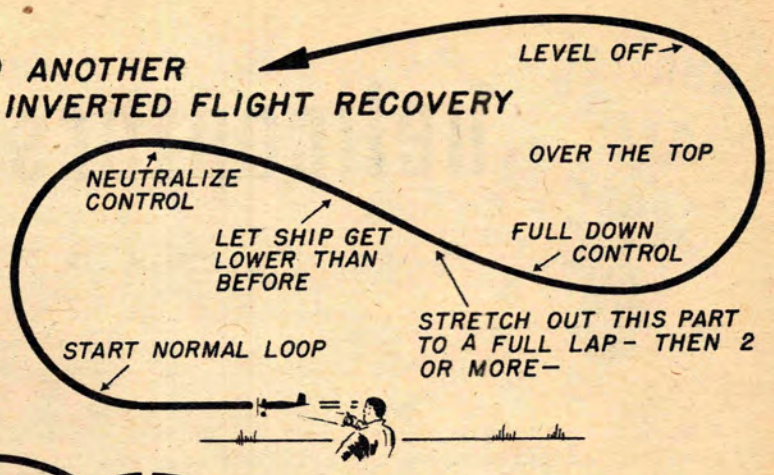
4 INVERTED FLIGHT


STEADY !
STAY HIGH
WITH SHIP HIGH NEUTRALIZE CONTROL –
INVERTED FLIGHT
FULL UP – TUCK UNDER & LEVEL OFF –
INCREASE PERIOD OF INVERTED FLIGHT A BIT EACH TIME –
SLIGHT DOWN CONTROL
UP TO A FULL LAP –
START NORMAL LOOP

UP IS DOWN – DOWN IS UP !

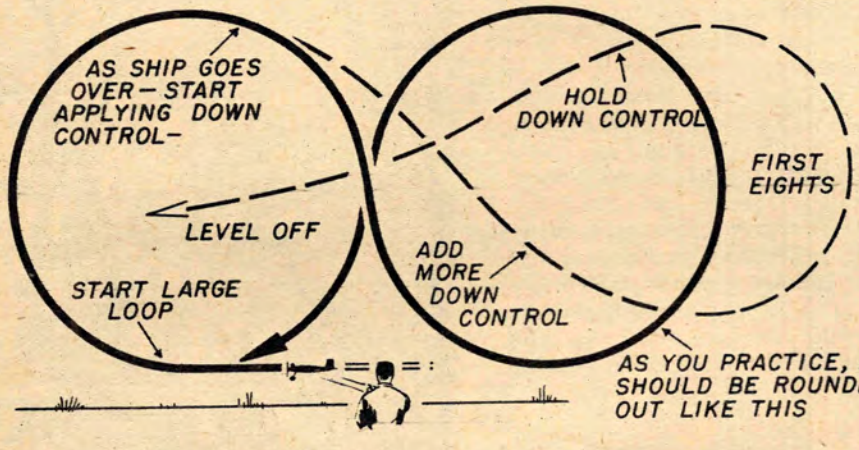
This informative material offers adjusting, flying tips and model improvements especially for the novice flyer. Tell us what other subjects you would like covered.

5 ANOTHER INVERTED FLIGHT RECOVERY


LEVEL OFF
OVER THE TOP
NEUTRALIZE CONTROL
LET SHIP GET LOWER THAN BEFORE
FULL DOWN CONTROL
STRETCH OUT THIS PART TO A FULL LAP - THEN 2 OR MORE -
START NORMAL LOOP

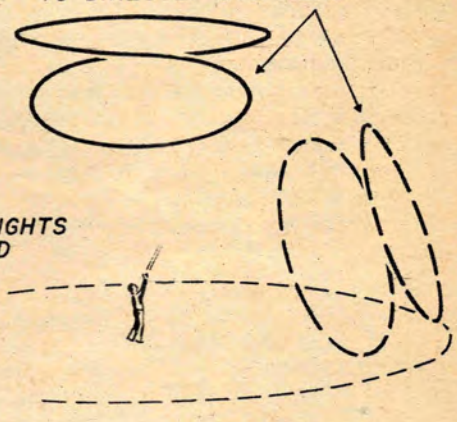
6 HORIZONTAL EIGHT

THE "S" SHOWN IN 5 IS GOOD TRAINING FOR EIGHTS THAT COME NEXT -

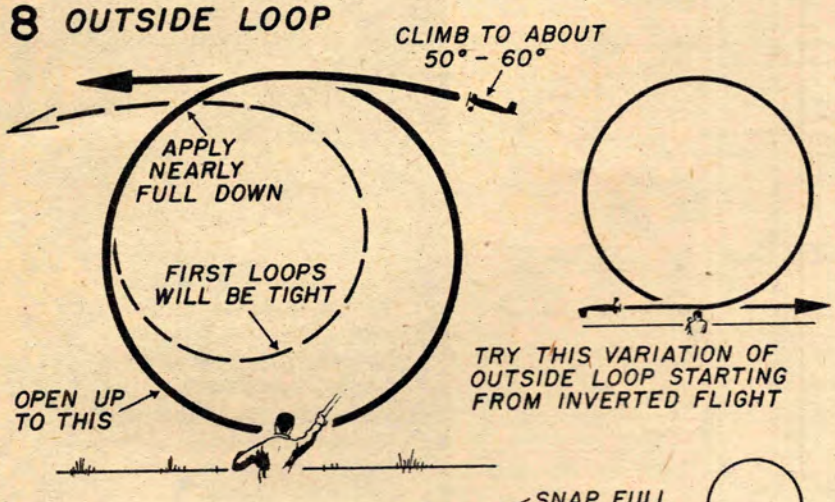

AS SHIP GOES OVER - START APPLYING DOWN CONTROL -
LEVEL OFF
START LARGE LOOP
HOLD DOWN CONTROL
FIRST EIGHTS
ADD MORE DOWN CONTROL
AS YOU PRACTICE, EIGHTS SHOULD BE ROUNDED OUT LIKE THIS

7 OVERHEAD EIGHT

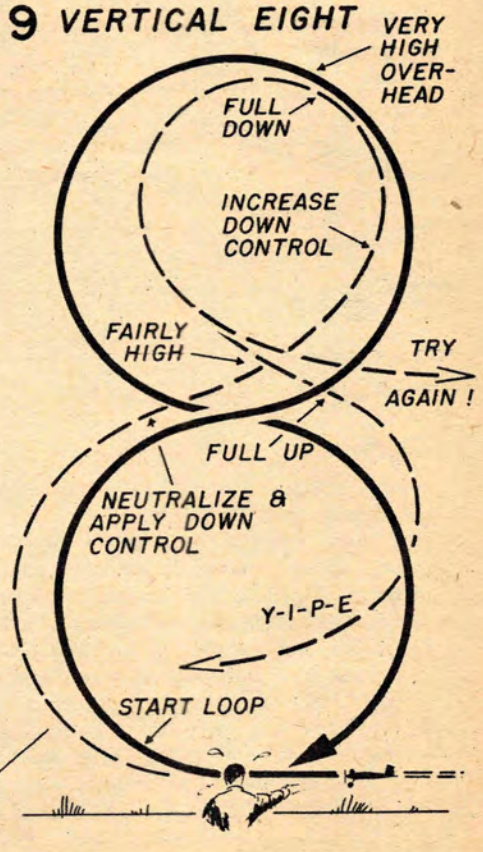
IS HORIZONTAL EIGHT MOVED UP TO DIRECTLY OVERHEAD



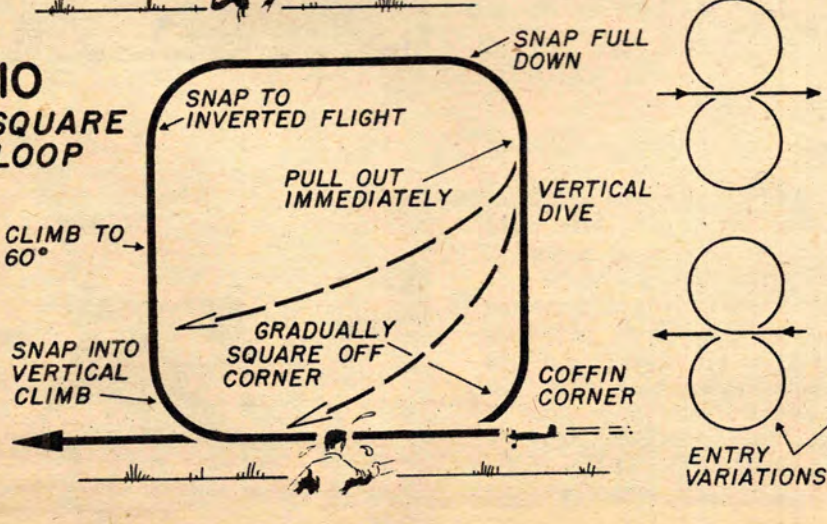
8 OUTSIDE LOOP


CLIMB TO ABOUT 50° - 60°
APPLY NEARLY FULL DOWN
FIRST LOOPS WILL BE TIGHT
OPEN UP TO THIS
TRY THIS VARIATION OF OUTSIDE LOOP STARTING FROM INVERTED FLIGHT

9 VERTICAL EIGHT



10 SQUARE LOOP



WHAT'S THE SCORE ON

helicopters

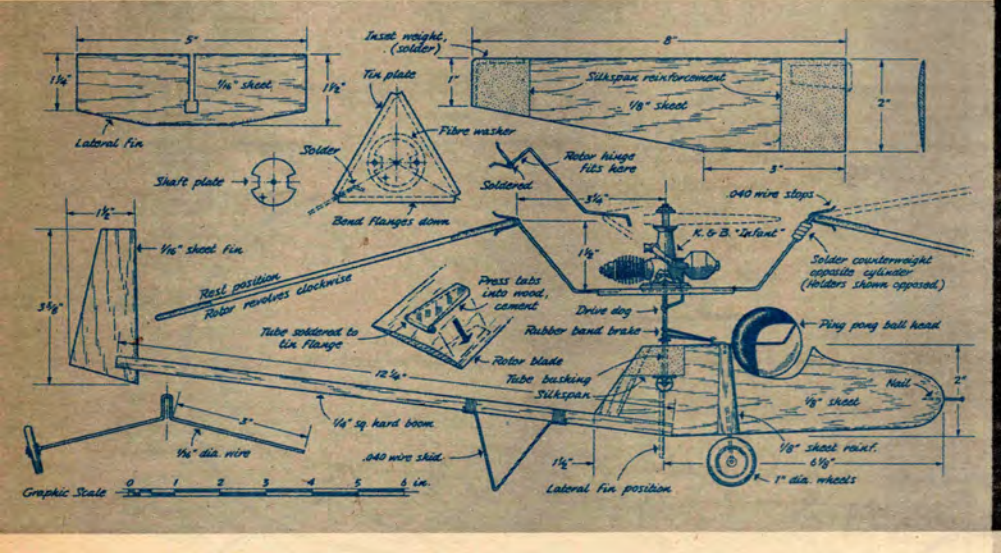
By ROY L. CLOUGH, JR.

■ Easily the most fascinating thing that flies, the helicopter is making a name for itself in peace and war as the marvelous machine that can land or take off anywhere, hover over one spot or tuck its nose down and scoot away in any direction the pilot chooses.

It is only natural then that model builders have been attracted to the type, for here is a flying machine which does its stuff close in where it may be observed and enjoyed, does not require huge tracts over which to fly, and which should give more solid hours of model fun than anything ever invented.

Or so it would seem at first glance. However, as many a model builder who has tried it will testify, it isn't quite that simple.

To some who have tried it, at first it appears a rather straightforward proposition—merely arrange a prop to pull upward, provide some method of torque nullification, presto, there is a helicopter. And several bitter disappointments later, the model builder sweeps up the



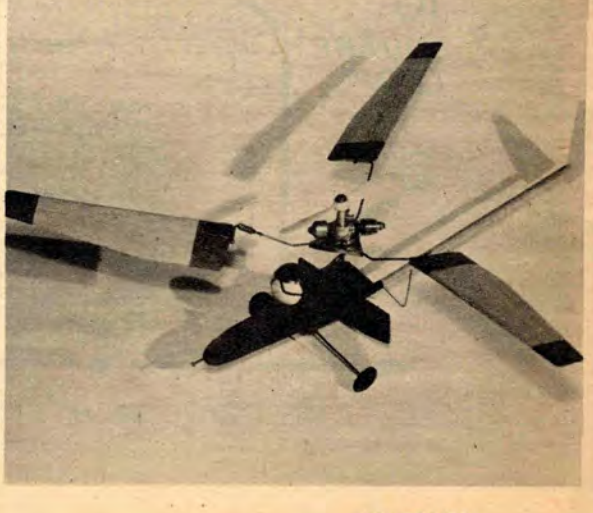
Power output controlled by mixing No. 2 fuel in various combos with Plus 30. 50-50 mix produces gentle climbing or "hovering" as in Infant-powered helicopter here. Author in foreground.

shattered balsa wood, lays aside his tools and tries to dig up some information on the type.

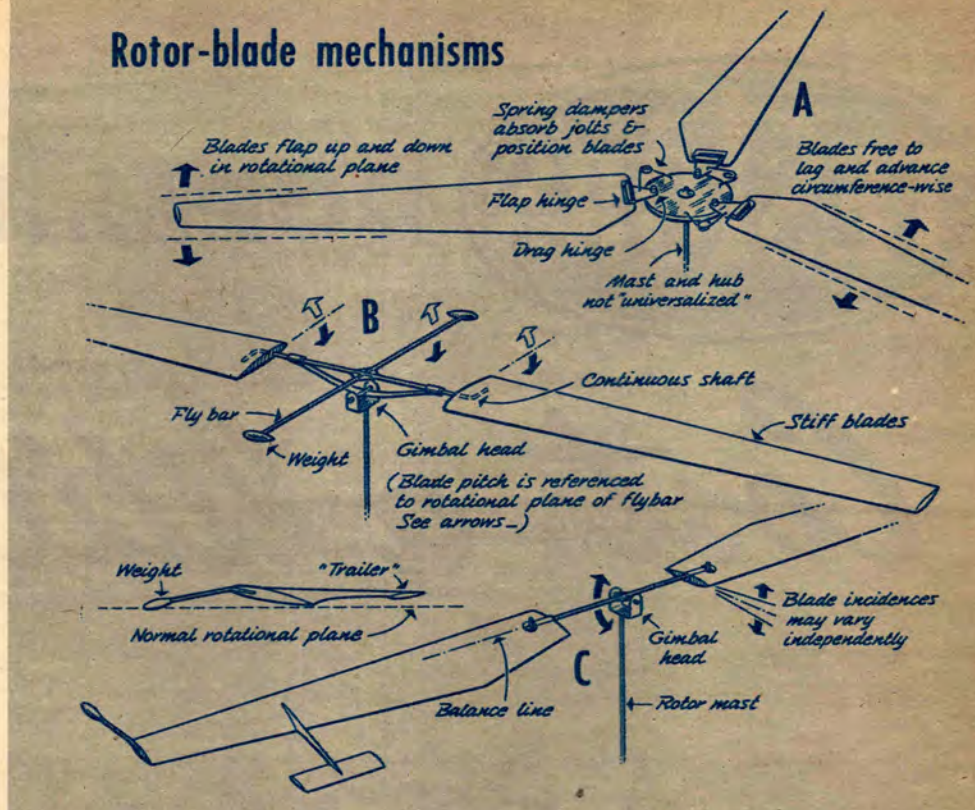
In many cases a study of the problems involved makes the whole thing look so impossibly complex that there seems to be little point in trying it at all. The envisioning of complicated controls, pushrods, flap hinges, dampers, complicated power transmissions, hairline adjustments and impossibly complex and delicate structures places the designing and building of a successful free flying model helicopter on the level of a major engineering feat—so the modeler puts the whole thing aside and starts sketching a new pylon job.

The truth of the matter, as in most cases, lies somewhere between the two extremes of utter simplicity and impossible complexity. A fair statement of the case is that a good model helicopter is no more difficult to build and fly than any other type of fairly advanced model aircraft.

What may appear to be *difficult* at first, becomes at second glance



Rotor-blade mechanisms



A. Fully Articulated Rotor. Not advisable for model use, being gyro-dynamically unstable. Centrifugal force holds blades in nominal rotational plane. *B. Feathering Rotor (simplified).* Rotor free to rotate on span-wise axis as unit. Forward flight possible under C. G. shift when plane-seeking "flybar" produces cycling effect. Best bet for 'copter beginners. *C. Feathering Trailer* using elements of Kaman and Young systems. Most stable of all types for vertical and hovering flight. Angle of attack controlled by trailer flaps; freewheeling here is automatic.

merely *different.* This is because there is very little in the way of carry-over analogy from fixed-wing models. Roughly speaking, the differences are of the same order as those between building a hot engine into a speed job and building the same engine into a boat. The principles are approximately the same, but the factors are different.

Helicopter information, in the empirical form in which it is most useful to model builders, has unfortunately been neither complete nor widely available. Therefore the design picture has been a bit clouded. Any up-to-date aviation fan, if he scratches his memory a bit, will recall having read that "articulation" is a good thing, that helicopters are inherently "unstable," that there are a great number of things like "cyclic" pitch and gyroscopic precessive forces to be dealt with. All of which contains elements of truth, yet just how these things apply to sitting down and actually building a flying model helicopter has been obscure.

The writer scored considerable success in rubber-powered helicopter models with his development of the cage drive co-axial system which allowed two rotors to revolve in opposite directions about a common center, thus canceling out both torque and gyroscopic effects. With this system, which first appeared in Air Trails some time ago, incorporated into the model, stable power-on free flight was possible for the first time without the use of complex control arrangements. Extremely steady in flight, the machine and a later variation of it were capable of rather surprising duration when winder-wound.

String-and-pulley system for power to rotor.

However, these flights were very largely vertical; it was not possible to secure any marked forward flight with the machine, barring the use of extreme nose-heavy trim.

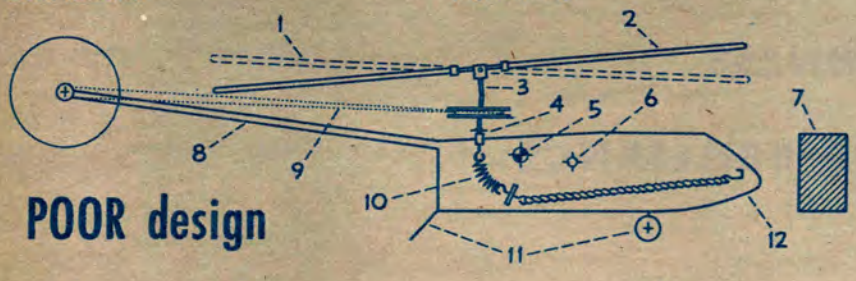
Later a further development, a kit design manufactured in limited numbers, featured a stabilizing or "damper" fin which permitted a fair degree of forward flight, with great steadiness and every indication of stability. So consistent was this type that by counting the number of turns stored in the motor the model could be flown from one table-top to another, time after time alighting within an inch or two of the desired spot. Several further variations of this machine were built, performing well.

Now, note that no blade articulation of any sort was used in these models. There was no provision for cyclic pitch changes and gyroscopic action did not enter the picture. Yet they flew very well under rubber power. Keeping that empirical fact in mind, let us further examine the co-axial system.

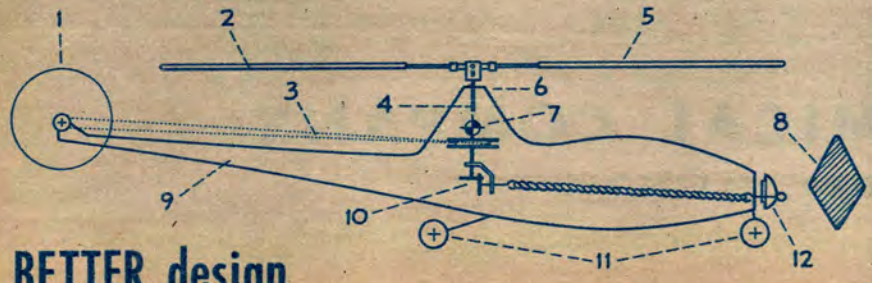
This system—meaning two rotors revolving in opposite directions, about a common center—is one of the oldest designers' answers to the question of what to do about torque reaction. Further, it appears to be ideal in many respects because it would seem that any disturbances, either aero-dynamic or gyroscopic, which occur in one rotor would be balanced immediately by the reverse of that (*Continued on page* 55)

POOR DESIGN. 1. Rotor blades out of track. 2. Blades out of balance. 3. Rotor mast misaligned. 4. Mast not well supported. 5. Center of gravity misplaced. 6. Keel center too far forward (poor horizontal flight). 7. Rectangular section bad for vertical wash. 8. Flimsy boom. 9. Torque drive subject to fouling by rotor. 10. Inefficient "trick drive." 11. Skid and front wheels makes poor ground bearing. 12. Winding must be done by turning rotor blades themselves.

BETTER DESIGN. 1. Cant torque rotor to eliminate sidewise "creep." 2. Very little rotor blade zone. 3. Torque drive clear of rotor. 4. Perfectly aligned, firm shaft. 5. Heavy, thin blades, well balanced. 6. Support close to rotor. 7. Center of gravity properly located. 8. Diamond section reduces rotor interference, aids torque correction. 9. Rigid boom. 10. Smooth-running bevel gears at ratio: unity. 11. Trike gear, good ground stability. 12. Nose plug for winding.



POOR design



BETTER design

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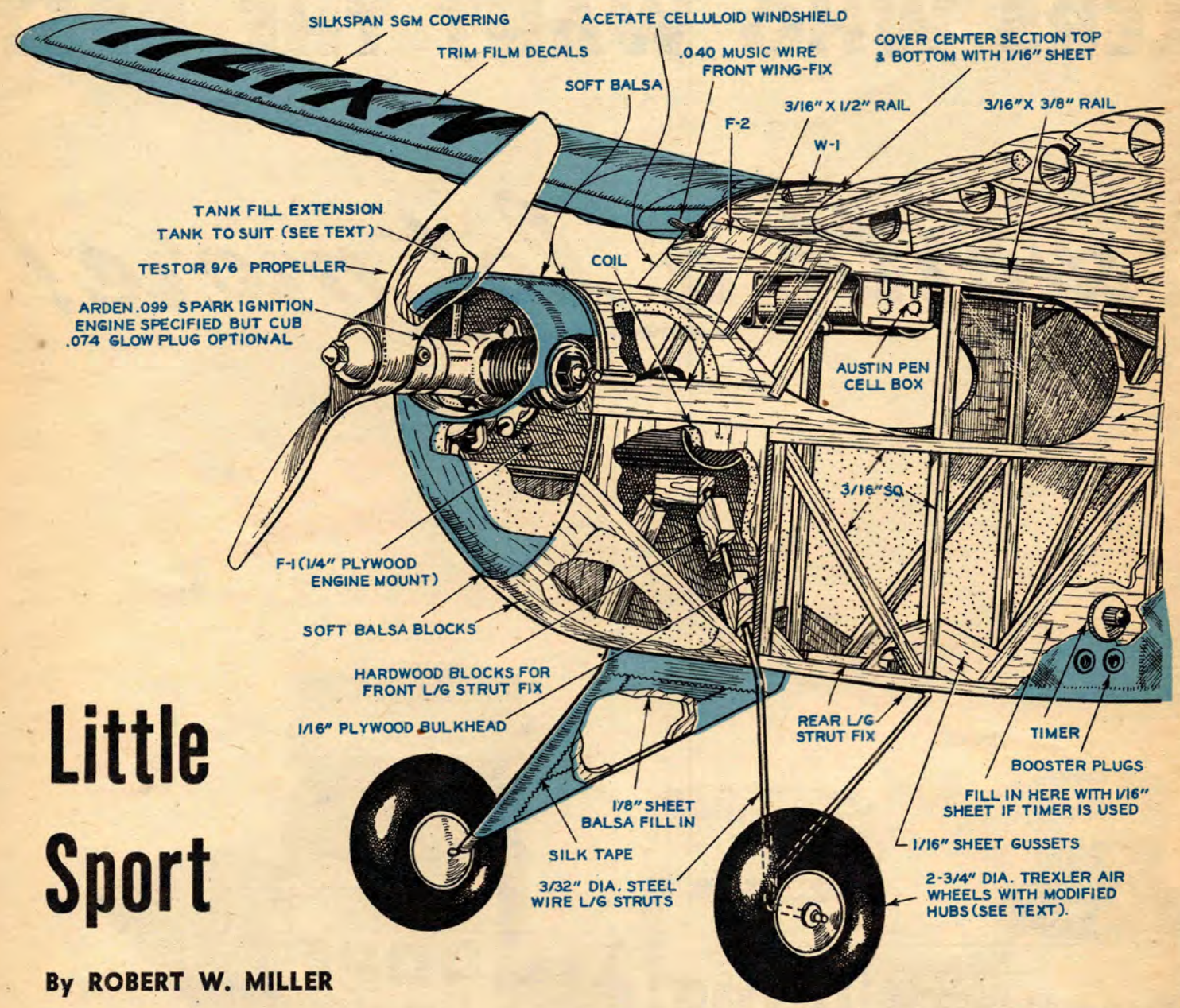

SILKSPAN SGM COVERING
TRIM FILM DECALS
ACETATE CELLULOID WINDSHIELD
.040 MUSIC WIRE FRONT WING-FIX
SOFT BALSA
COVER CENTER SECTION TOP & BOTTOM WITH 1/16" SHEET
3/16" X 1/2" RAIL
3/16" X 3/8" RAIL
F-2
W-1
TANK FILL EXTENSION
TANK TO SUIT (SEE TEXT)
TESTOR 9/6 PROPELLER
ARDEN .099 SPARK IGNITION ENGINE SPECIFIED BUT CUB .074 GLOW PLUG OPTIONAL
COIL
AUSTIN PEN CELL BOX
3/16" SQ.
F-1 (1/4" PLYWOOD ENGINE MOUNT)
SOFT BALSA BLOCKS
HARDWOOD BLOCKS FOR FRONT L/G STRUT FIX
1/16" PLYWOOD BULKHEAD
REAR L/G STRUT FIX
TIMER
BOOSTER PLUGS
FILL IN HERE WITH 1/16" SHEET IF TIMER IS USED
1/8" SHEET BALSA FILL IN
SILK TAPE
1/16" SHEET GUSSETS
3/32" DIA. STEEL WIRE L/G STRUTS
2-3/4" DIA. TREXLER AIR WHEELS WITH MODIFIED HUBS (SEE TEXT).

Little Sport

By ROBERT W. MILLER

■ Here is a Class A model for .099 size engines which should please the heart of any model builder. Our first thought was of size, a large enough model to take the bite out of the average engine in this smaller class and give us a ship which would be a pleasure to fly.

A rugged frame was the next thing in order and by using hard balsa in practically every point of construction, plus a covering of Silkspan SGM, a model of unusual strength evolves. With a combination of this sort you will have a sport job second to none and one which you never need leave at home because it's too windy to fly.

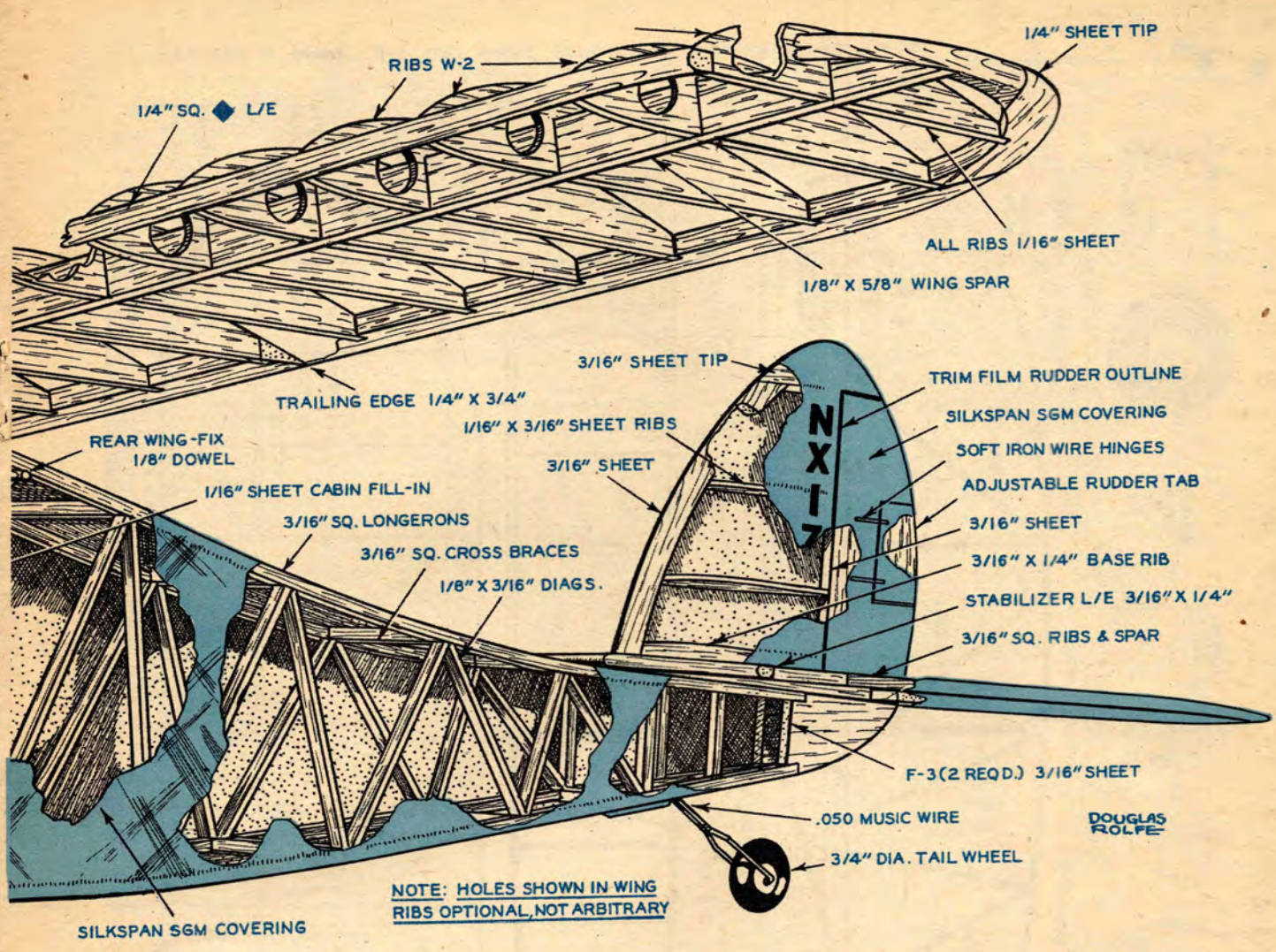
A spark ignition Arden .099 was used as the test powerplant in this model with fine results, but for those who would want to glow plug it, merely watch the balance of the ship and keep the tail construction light while beefing up the nose with hard balsa cowling blocks, etc. A Cub .074 glow plug engine is an excellent size for ignitionless operation.

The fuselage sides are built in the usual manner, one on top of the other. The ½" x 3/16" balsa runners at the front of the fuselage are cemented to the 3/16" sq. fuselage side pieces during their construction, and it is advisable to cut them to the window outline and notch them before they are cemented in place.

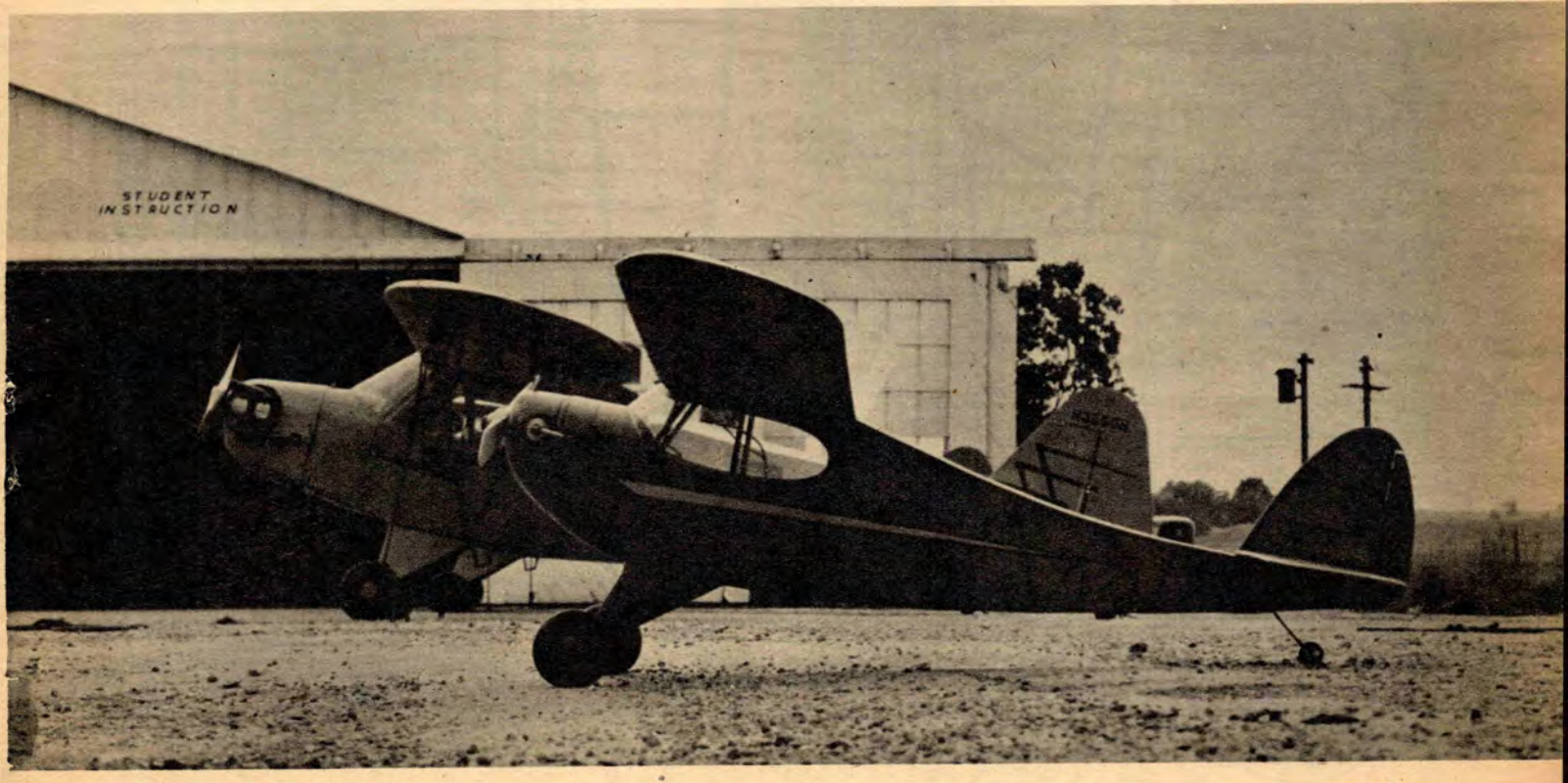
After the sides are dry, sand them lightly and then jig them upside down on the bench, using a square and some weights to hold in position. Insert the four 3/16" sq. x 3⅜" spacers at the points marked "A." After the cement is dry, add the gussets on the bottom sides of the fuselage and put in a ⅜" x ⅛" cross brace, on edge, where the rear landing gear strut will cross.

Bulkhead F-1 should be jigsaw-cut and the bottom edge beveled as shown in the side view of the plan. Drill the motor mounting holes and also holes for the wires if the model is ignition operated. Apply a good coating of cement to the notches and mount F-1 on the ½" x 3/16" rails, being careful to keep it square with the fuselage.

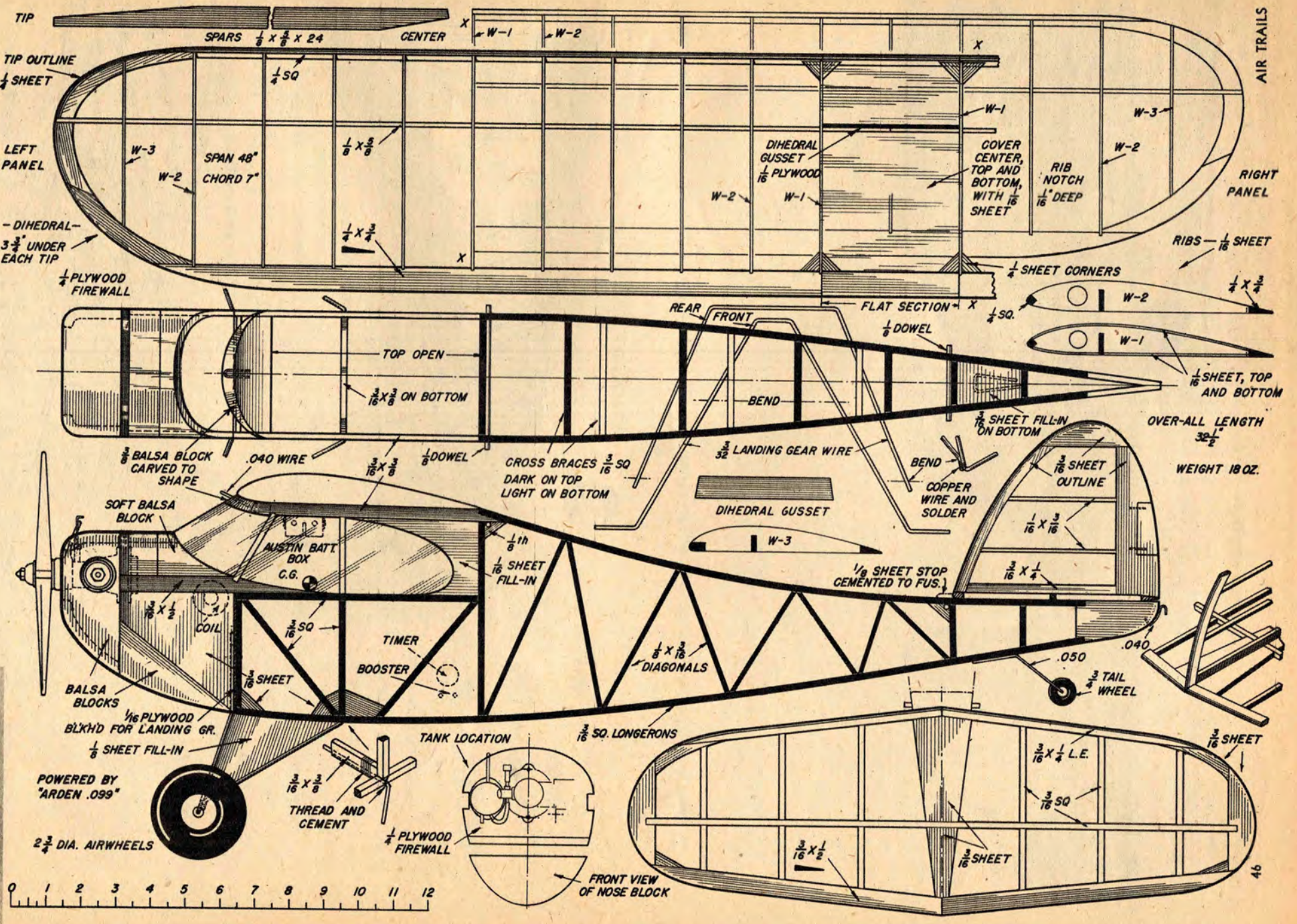
Shave the inside faces of F-3 so that they are about 3/16" wide when the ends of the fuselage are drawn together. . . . *Further construction details on the "AT" full-size plans.*



Glow plug or ignition—radio control or sport free flight—take your pick; sure looks like a big Cub!



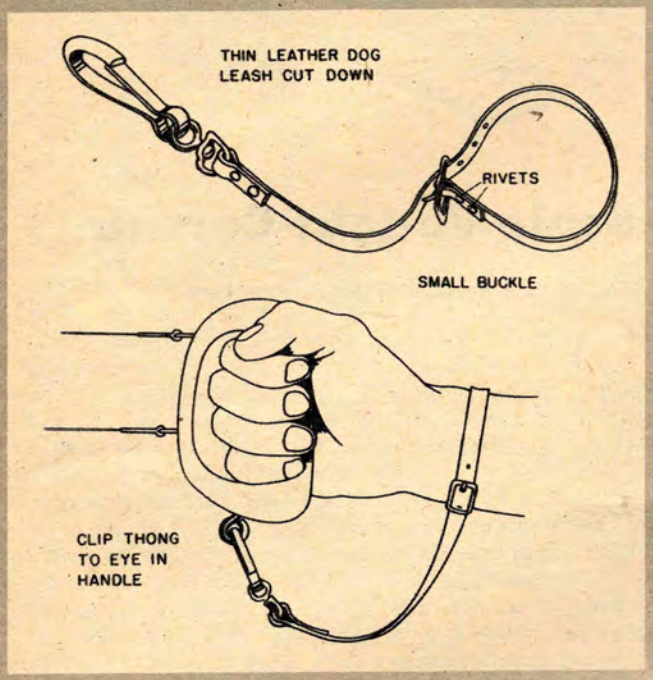
How's about getting outta that pylon rut; let's build a realistic one!

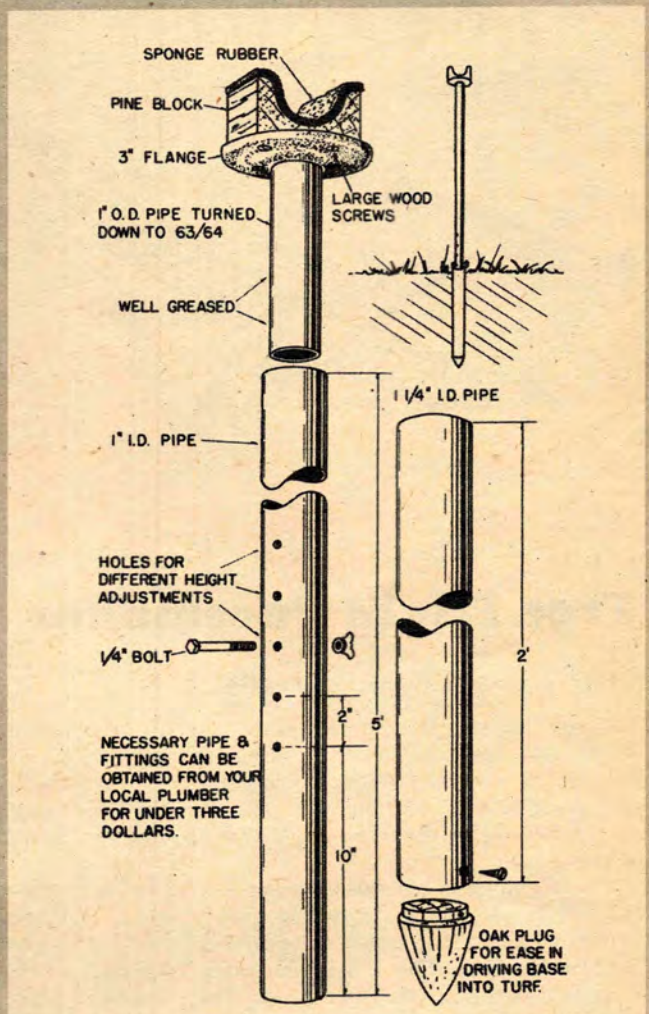


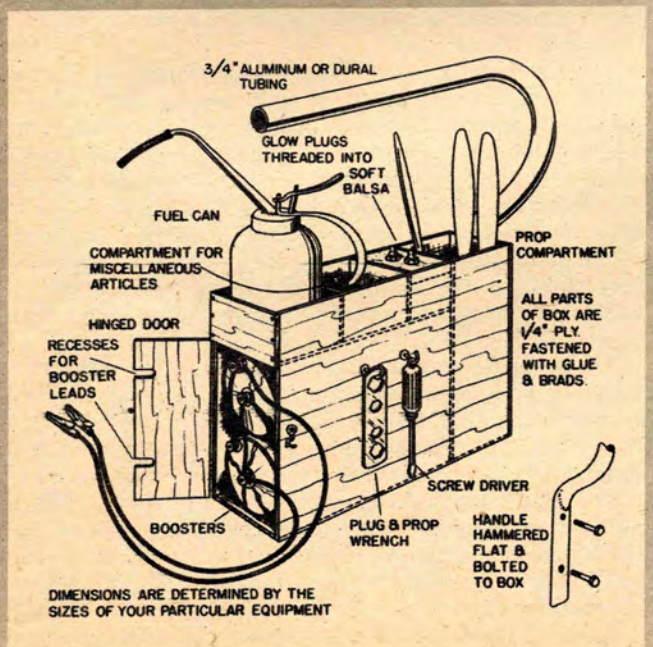
Speed Pointers

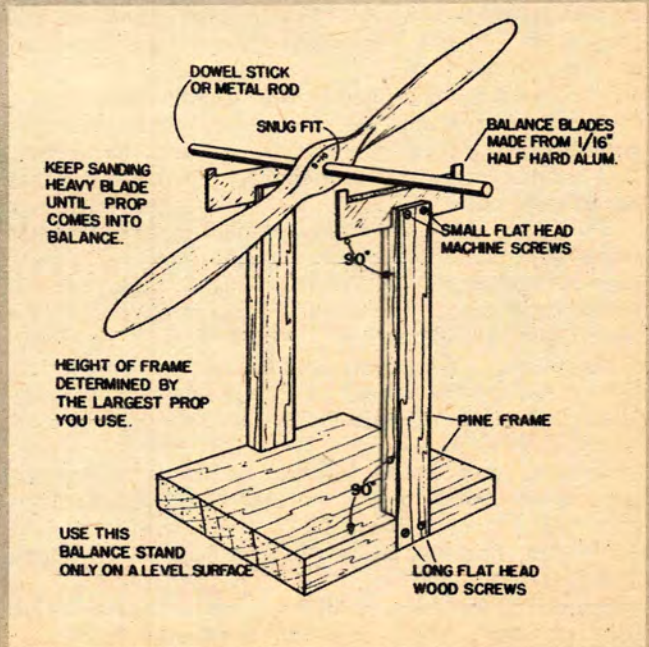
By HAROLD STEVENSON

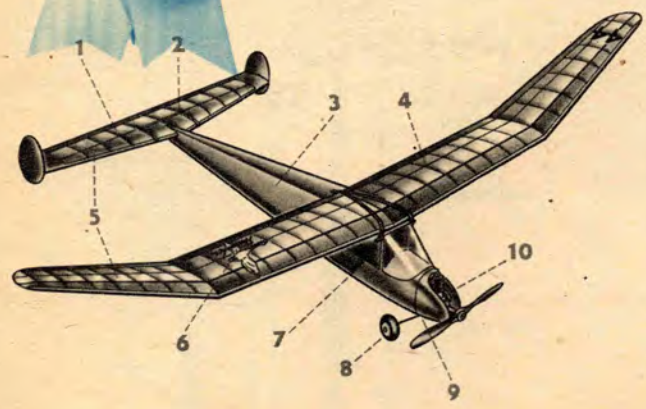
Here are four fine suggestions for speed fans from Harold Stevenson, air-model artist par excellence, and speed-flyer who flies just about par. The safety thong is easily made and permits you to disengage the handle without a lot of fuss. The speed pylon has been used by several active clubs and found to be most satisfactory. All the hard work is done by your ("friendly") local plumber. You'll add rpm's to your motor and lengthen its life with a properly balanced prop; keep smooth, sharp edge on the balance blades. Mr. Stevenson's contest "ready box" keeps things neat and handy.

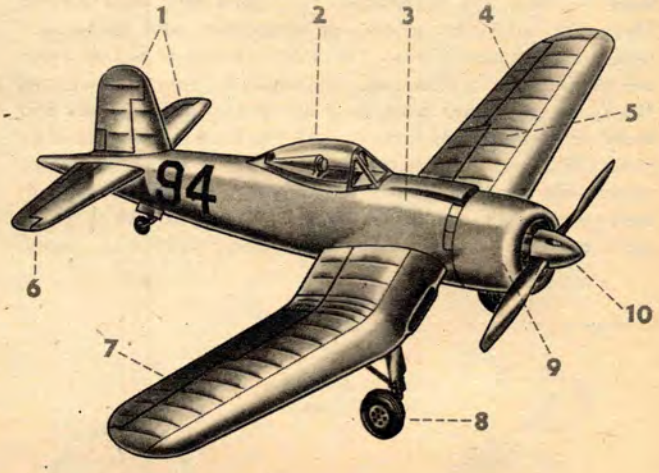





3/4" ALUMINUM OR DURAL TUBING
GLOW PLUGS THREADED INTO SOFT BALSA
FUEL CAN
COMPARTMENT FOR MISCELLANEOUS ARTICLES
PROP COMPARTMENT
HINGED DOOR
RECESSES FOR BOOSTER LEADS
ALL PARTS OF BOX ARE 1/4" PLY. FASTENED WITH GLUE & BRADS.
SCREW DRIVER
BOOSTERS
PLUG & PROP WRENCH
HANDLE HAMMERED FLAT & BOLTED TO BOX
DIMENSIONS ARE DETERMINED BY THE SIZES OF YOUR PARTICULAR EQUIPMENT


DOWEL STICK OR METAL ROD
SNUG FIT
BALANCE BLADES MADE FROM 1/16" HALF HARD ALUM.
KEEP SANDING HEAVY BLADE UNTIL PROP COMES INTO BALANCE.
SMALL FLAT HEAD MACHINE SCREWS
90°
HEIGHT OF FRAME DETERMINED BY THE LARGEST PROP YOU USE.
PINE FRAME
90°
USE THIS BALANCE STAND ONLY ON A LEVEL SURFACE
LONG FLAT HEAD WOOD SCREWS





Free Flight Pacemaker

Comet's beauty looks like soaring glider

■ Comet Model Hobbycraft, Inc., has brought out a very sleek Half-A free flight gassie that has a look of real performance. Called the Pacemaker, the ship is the work of Vito M. Garofalo, and has the appealing appearance of a soaring glider, with its long slim wings.

The fuselage is assembled upon a basis of eight die-cut (3) formers, one of ply (9), two built up, and five of solid balsa. The balsa sides are die-cut with slots for the formers. The top is one piece of balsa, while five strips are used on the bottom. There's a neat plastic cowl (10); most powerplants will fit with just the tip of the cylinder projecting. The landing gear is single wheel; you get the shaped wire piece and a turned hardwood wheel (8). You will find an exploded view of the fuselage and a variety of detailed sketches in the plan.

The stabilizer is hinged to the fuselage (2), so that a dethermalizer may be fitted. Stab construction is completely built up; ribs are die-cut and the leading and trailing edges are fully shaped (1). Twin rudders are of solid balsa.

The wing also has finished leading and trailing edges (4). The wing section is quite thick and is concave on the underside. Polydihedral is employed.

The drawings of the wing are full size and include both right and left panels, so you can build the whole thing at once. Wing covering (5) is light but tough Silkspan. Also furnished are decal insignia and numerals (6) plus die-cut fuel-proof windshield and windows (7).

Engines from .035 to .050 may be fitted; 5.5/3 props have given good results on the .039 engines; 6/4's gave top efficiency with .049's. Span is 40″; area is 165 sq. in. The test plane weighed 5 oz. when doped and fuel-proofed.

Slight rearrangements of the fuselage allow fitting a dummy for PAA-Load flying. Suggested flight pattern is climb to the right and left turn in the glide.

Scale Vought-Corsair

Miniature's flying scaler is complete

■ The F2G was a Goodyear-built version of the Vought-Corsair; only a few were made and these have been used principally for racing. Miniature Aircraft Corp., Staten Island, N. Y., has reduced this ship, which was the Thompson Trophy winner in 1949, to a beautiful 1″ scale model. The plane has a span of 41″, and is 31″ long. It is intended for use with Class B or C engines—the plans show an O&R .23 installed.

This concern has always gone in for every possible bit of realism in models, and the F2G kit is a good example of this. You will find such deluxe items as a pair of Veco wheels (8), a plastic spinner (10), formed plastic canopy (2), and a spun aluminum cowl (9). The drawings are very well detailed and the instructions complete; but this is not a job for the rank novice.

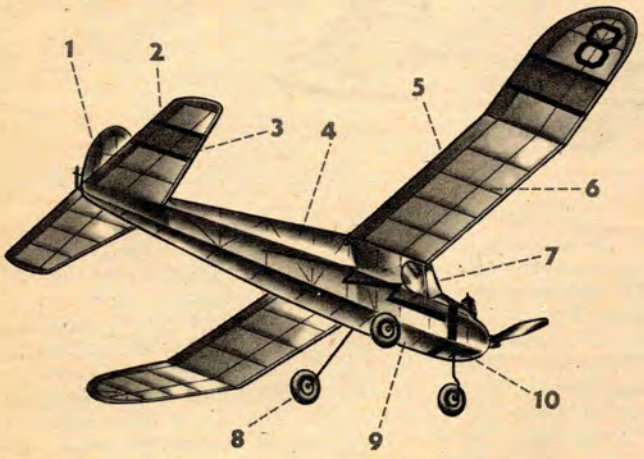
The fuselage is based upon a balsa crutch and balsa formers (3). There are hardwood mounts for the engine, or it may be fastened directly to the ply firewall. The cowl is cut to clear the particular engine used; most will show only a small portion of cylinder head. The engine is inverted to aid realism. Fuselage is covered by balsa planking, for which a large bundle of soft balsa strips ⅛″ x ⅜″ are included. Music wire is furnished for the main landing gear. In addition to the large wheels, there is a tiny rubber-tired tail wheel.

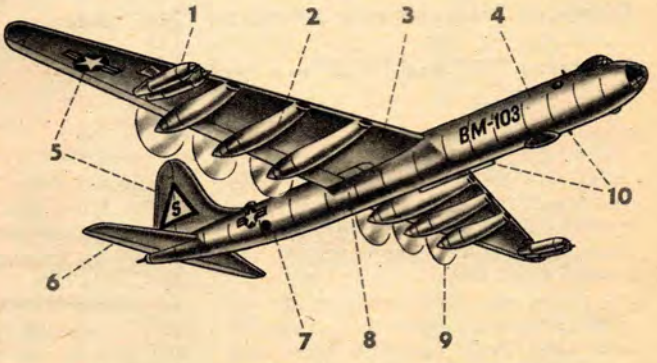
The horizontal tail surfaces (1) are of solid ¼″ balsa, cut to plan shape and ready for sanding to symmetrical airfoil section. Since the model will be flown mostly on controline, the flippers must be hinged (6) and control mechanism fitted as desired.

The wing has the characteristic Corsair inverted gull shape. Ribs and curved parts (4) are printed on the balsa sheets as are other sheet balsa parts. There are 32 ribs; ailerons are made movable (7). Covering is Silkspan (5).

Careful attention to workmanship should result in a sure beauty contest winner.

RIBBON MODELS





Nu-Look for the Brig

Berkeley's combo job is really versatile

■ This is the former "baby Brig," redesigned for R/C and PAA-Load work, as well as for sport. Representatives of Berkeley Models Supplies, West Hempstead, N. Y., recently began to see the old ship being flown as a Half-A radio job; if there was this much interest in the old baby, they thought, why not re-do the job up right? So here she is—a tiny R/C plane, usable for sport and payload as well.

The entire setup is very similar to the old Brigadier 58 and the newer Super-Brigadier. "Baby" is even more up to date, however, for she has trike gear (8)!

The nose of the fuselage has been beefed up and the framework itself has been widened so that you can fit in a load, either dummy (9), or electronic. The entire fuselage is built of 5/32" square balsa in the traditional "make-two-identical-sides-and-fasten-them-together" system. The nose and main gear wires, which are fully formed, fasten to die-cut ply pieces (10). There is ample room for the Berkeley Super-Aerotrol—natch! Material and instructions are included for radio-control tab (1).

The wing and stabilizer (3) are of very similar construction. Both use a 5/32" square leading edge (5), triangular (2) trailing edge (supplied shaped and notched for die-cut ribs—6) and double ⅛" x 3/16" main spars. Tips are pieced together from sheet balsa. Different degrees of dihedral are suggested, with more being used for sport and load flying than for R/C. The fin is also built up, with a rudder of sheet balsa hinged by cloth tape. One sheet of colored and one of white covering paper (4) are furnished. Die-cut windshield material (7) is included.

Installation of three different makes of engines is shown, but no larger than .074 should be used for R/C, and the .049's will probably be plenty. The finished plane equipped with radio will weigh slightly under a pound, so the 205 square inches of area won't have so much trouble carrying the plane. But don't pile on the colored dope!

Built-up B-36 "Solid"

Guillow's shelf-scaler is "D" version

■ Recent additions to the solid line of Paul K. Guillow, Wakefield, Mass., retailing for 50c each include the Boeing B-47, McDonnell Banshee and Convair B-36. These models are of the same general construction as the Guillow 25-centers, but are larger. The B-36, our subject here, has a finished span of about 15", and is almost a foot long.

A sheet of die-cut 1/16" sheet contains the fuselage sides (4) and small detail parts (7). The fuselage top is made up from two pieces of 7/32" sheet cemented butt to butt. Use of this heavier stock on the top makes it possible for the builder to round off the upper surface for a very realistic appearance. To cover up the underside, the builder may use either heavy paper or sheet balsa.

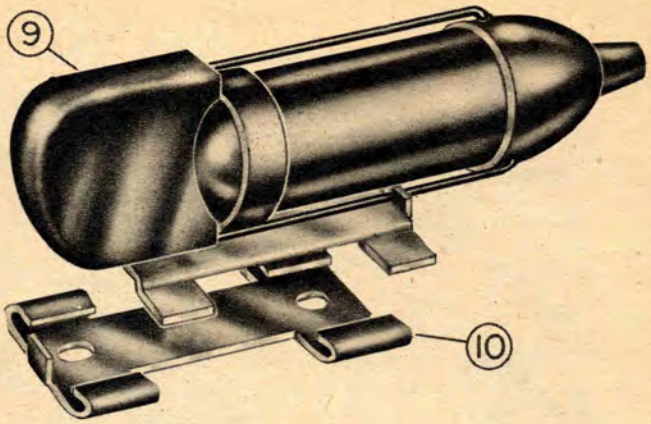
Wings (3) and tail surfaces (6) come out of a single sheet of 3/32" material, the wing being in halves. Position of the various motor nacelles is marked on the wing. The die-cut nacelles themselves (2) come from the 7/32" sheets, as do the eight wheels of the main landing gear. As another aid to realism, the B-36 kit includes eight clear plastic discs (9) to represent turning props. Jet engines and mounts (1) are die-cut; parts are die-cut for the optional landing gear (8).

A printed sheet in two colors carries the wing and fuselage insignia (5) that nicely dress up the ship.

The plans have step-by-step instructions and sketches for fuselage assembly, an exploded view of the complete plane, a full-sized side view, and plenty of text (10) to help the novice make a good job of his B-36.

The Guillow concern is also noted for its postwar work in the field of control line stunt kits designed by Lou Andrews. Current stars in the Guillow "Trixter" line of U/C stunt include the Barnstormer, two-time National winner, the Baby Barnstormer, Profile Trainer and Trixter A-B Profile and the Trixter B-C Profile.

The Jetex Trio



American Telasco's new Jetmaster "150" plus the Jetex "50" and "350" are real jet engines

■ By now there should be few serious modelers who are not familiar with the Jetex line of model powerplants. For the newcomers, we say briefly that these motors are true jet power units which operate on solid fuel pellets ignited by a special fuse. Lest there be some fears that the fuel may be called "fireworks," it should be emphasized that Jetex pellets are sold in many localities where the sale or use of ordinary fireworks is strictly forbidden.

No fire spouts out of the jet unit, and it emits only a faint trace of smoke. To test this we held a strip of soft balsa two inches from the jet outlet while the unit was burning; the wood had only the slightest bit of smoke darkening, but no burned appearance whatever. A strip of thin asbestos is packed with every Jetex set. This should be put under the motor to protect the fuselage from careless lighting, and from the fuse, which "sparkles" for the few moments it burns.

It is preferable to light the Jetex engines with a cigarette, Chinese "punk," or with dethermalizer fuse, rather than with a match. Keep dope off the areas to the immediate rear of the jet unit, and protect the wood there with a coating of "water glass," obtainable from the local druggist.

The Jetex line has recently been changed a bit, by the addition of a souped-up new model, the Jetmaster "150." This uses extra "hot" fuel and can be fitted with a special tail tube called an "augmenter," which will give an increase of about 25% in thrust. This tube is especially useful in scale models; they are usually overweight anyway and can use the extra thrust, and the tube protects the interior of the fuselage (it gives a much healthier roar, too!). The augmenter is of heavy aluminum foil 13½" long, and weighs about .4 oz. It may be cut shorter as required.

All Jetex engines feature some sort of spring-held removable cap at the outlet end. This makes reloading easy and the spring effect is the safety valve of the engine; if the outlet should become clogged (a very remote possibility, if the engine is operated properly) the springs allow the internal pressure to leak out safely.

These engines are completely torqueless, of course, which is a great boon to the modeler. However, you can shift the mounting clips to get side or downthrust, if you wish.

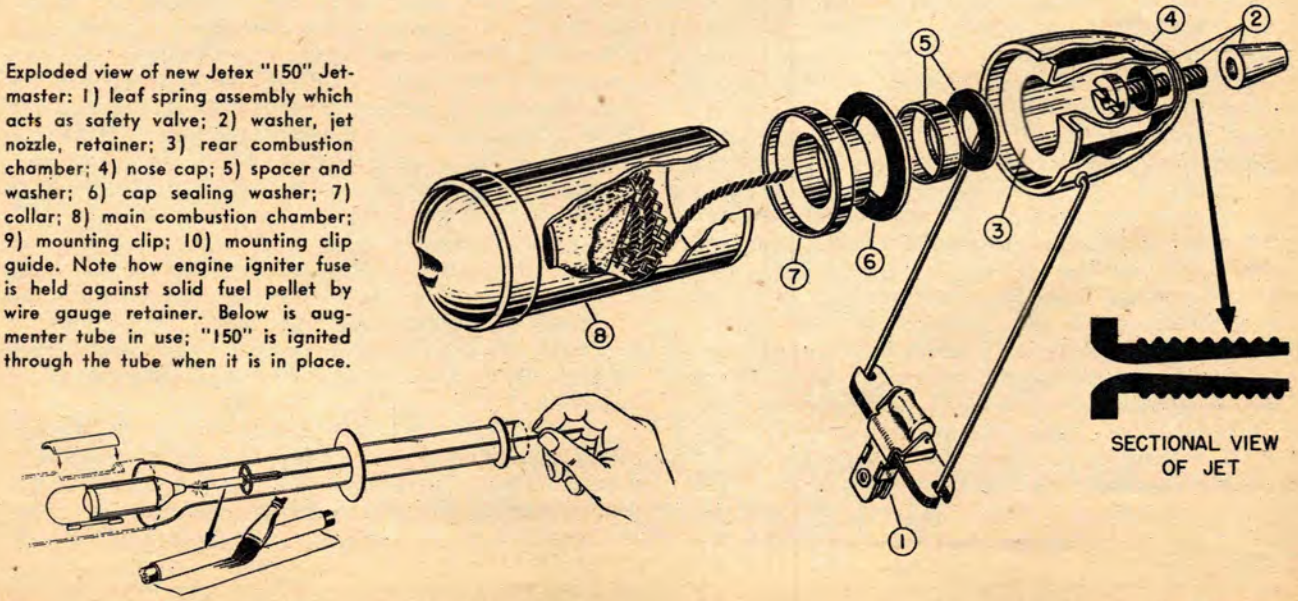
The instruction sheets stress it, and we feel it well to emphasize here that Jetex-powered models should not be operated by the old firecracker technique of lighting and heaving! The fuel starts burning rather slowly, and a model should be held till the engine is hissing strongly. A few trials will show you when to launch. The thrust is remarkably steady once it reaches its peak, and dies off quite suddenly when the fuel is burned out and the glide begins.

We set up a test stand to try out the various Jetex models. The measuring system indicated that the manufacturer's published thrust and duration figures are quite average and not "padded" in any manner.

Let's run over each member of the Jetex series for characteristics:

Jetex "350". This is the heavyweight of the line, both in weight and thrust. It normally uses three fuel pellets, but may be operated with two or one, for test flights. The end cap is held on by five heavy springs, which are the safety valve of this model. A wood-handled tool is furnished for working the springs. If the "350" is operated for test purposes, with the plane not in motion, only one pellet should be loaded, to prevent overheating.

Jetmaster "150". The new member of the line (*Continued on page* 55)



Exploded view of new Jetex "150" Jetmaster: 1) leaf spring assembly which acts as safety valve; 2) washer, jet nozzle, retainer; 3) rear combustion chamber; 4) nose cap; 5) spacer and washer; 6) cap sealing washer; 7) collar; 8) main combustion chamber; 9) mounting clip; 10) mounting clip guide. Note how engine igniter fuse is held against solid fuel pellet by wire gauge retainer. Below is augmenter tube in use; "150" is ignited through the tube when it is in place.

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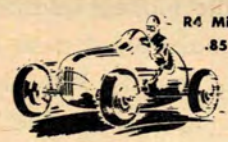

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Dottie — CALIFORNIA INDOOR GLIDER

By JOE BILGRI, Member, 1952 U. S. Wakefield Team

■ Dottie earned her name because she's so nice to look at with her slow flat glide and easy launching characteristics. This glider has plenty of strength for the stronger arms, but when flying under the lower ceilings the strong arms and the weaker ones are on an equal basis. Besides its first place at the 1951 Nationals, it has won a first place in the Open Class at the 1948 All Western Open with 1:04.5, and has a best time of 1:07 in record trials.

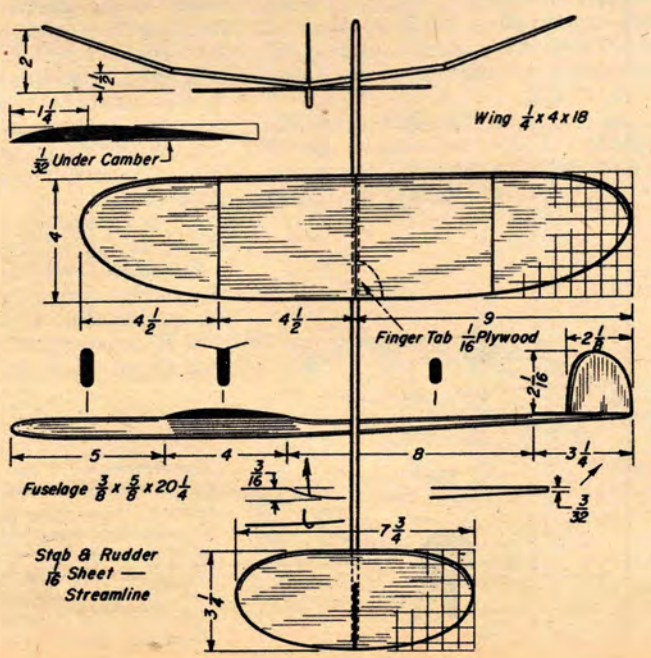
The fuselage is made from straight-grained medium-hard balsa. The section between the trailing edge of the wing to the stab should be sanded to an oval shape for strength. The wing V is then notched and the fuselage is sanded with fine sandpaper.

The wing is one piece from real light balsa. Quarter-grained stock is best. Quarter-grained stock does not absorb as much sealer as do the other cuts, but on a low-ceiling glider only one light coat is applied, this being mostly sanded off. The wing is first cut to the outline shape and the undercamber sanded starting with coarse sandpaper, and after approximately 1/32-inch is sanded it is finished up with fine sandpaper of about 400 grit.

The top part of the airfoil is made with a sharp long-bladed knife or a small block plane and finished with fine sandpaper. The wing is then cut into four sections and the tip dihedral of one inch is put in each half of the wing; after these have dried the two halves are joined at the center so that each tip has about 2" polyhedral.

All joints should be given two or three coats of cement before fastening it to the fuselage. After the wing is thoroughly dry it can be cemented to the fuselage along with the 1/16" plywood finger tab.

The rudder and stab are cut from light 1/16" sheet balsa and sanded to an airfoil shape with the trailing edge sanded very thin and finished with No. 400 paper. The stab is cemented to the fuselage and (Continued on page 70)



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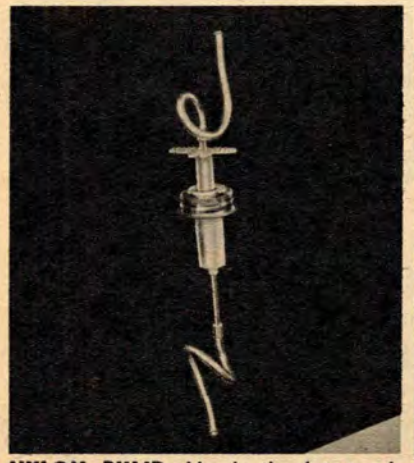

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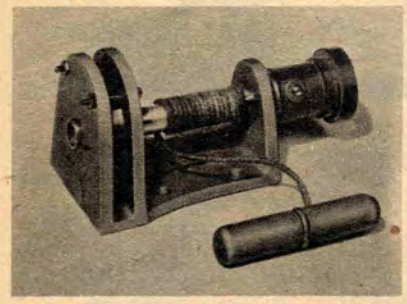

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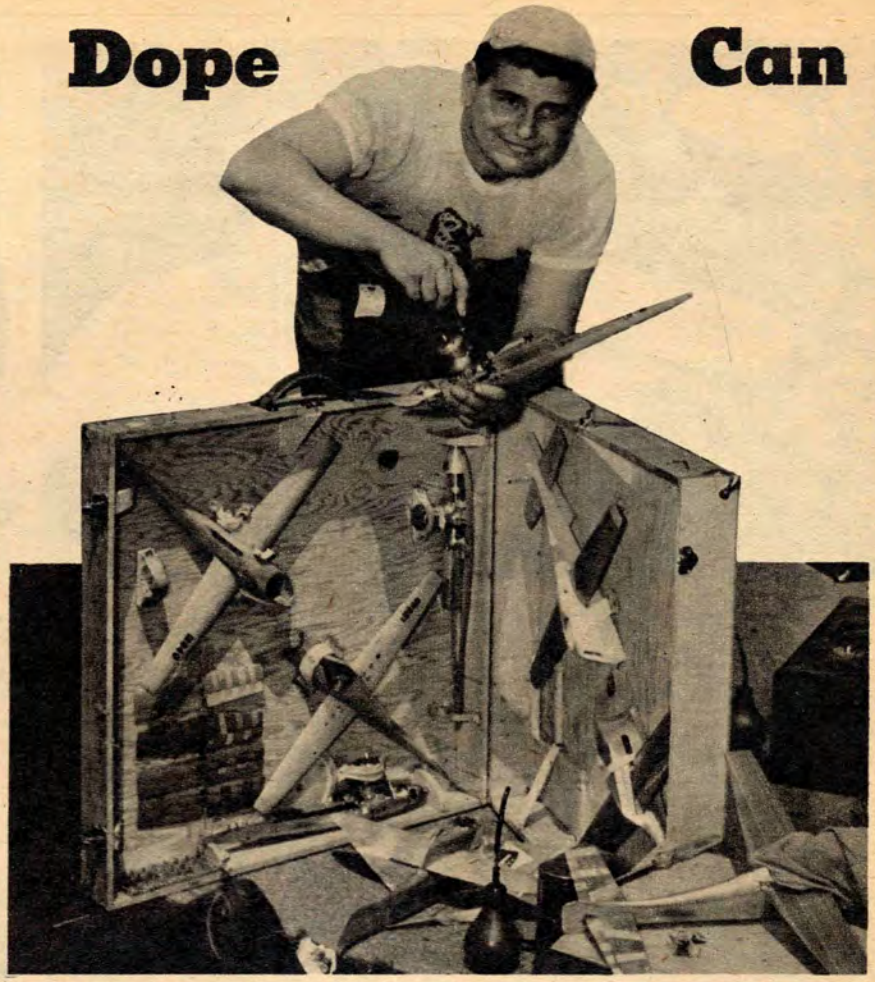

Beautiful, practical speed box by Nick Arpino, "free lance" modeler, Bay Ridge (Bklyn) NY.

■ From all reports received by the Dopester the Model Aeronautics Association of Canada is going along in grand manner. The MAAC is the Canadian equivalent of our own AMA and like the Academy enjoys the benefit of F.A.I. representation. Officers for the Canadian governing body this year are Lavalle J. Walter, president; J. Arthur Covey, vice president; and Ken H. Speiran, secretary-treasurer. If you want more information on any phase of MAAC activities you can address the Association at 545 Josephine Ave., Windsor, Ont.

This year—for the first time—the Canadian "Nationals" will be run off on a decentralized basis. The country has been divided up into five zones with official events run off as follows: Pacific Zone meet at Victoria; B.C. Zone meet at Vancouver; South-Western Zone meet at Windsor, Ont.; Central Zone meet at Brantford, Ont.; and the St. Lawrence Zone meet at Verdun, Province of Quebec. All the zones were to run their free flight events off on one week end with U/C competition on another. Results of each Zone competition were to be forwarded to MAAC headquarters and the "all-Canada" winners determined by best performance. Conducted properly this is the next best thing to an "in persons" Nationals. Our Canadian friends are to be congratulated for their aggressiveness and spirit of adventure.

For our northern readers here is a listing of active Canadian clubs:

ONTARIO—Windsor MAC, 1160 Marentette Ave.; Canadian GMC, 62 St. John's Rd., W., Weston; Brantford Kloudsters, 47 Nelson St.; Oshawa Cloud (*Continued on page* 78)

"Sportsmanship" certificate presented by NY Mirror to industry-member contestants states that "Joe Doe in recognition of his unceasing efforts on behalf of the American modelplane industry and in consideration of his outstanding performance at the Mirror Model Flying Fair is hereby invested with the title of Sportsman-Expert." Nice commendation!

Jetex Trio

(*Continued from page 50*)

is quite a complex assembly, but is still very easy to load. Normally used with a single pellet, the case is long enough to put in about another ⅓ pellet, and so obtain about 3 or 4 seconds longer power duration. Pellets may be cut with a coping or hack saw; for test flights with the "150" and "50", some flyers cut pellets in half to reduce duration.

This engine is designed to work with the augmenter tube, and use of this tube gives an honest half-ounce more thrust, with no reduction in duration of power run. The Jetmaster uses a new fuel that has more pep than that supplied for the other Jetex engines, and this, together with its advanced design, probably accounts for the higher power output relative to weight.

Jetex "50". Baby of the line, this unit is ultra simple in construction and operation, yet it makes it possible to build flying jet models of 12-20" span, which will give astonishing performance, if the weight is kept around an ounce or less. The first cost and the refueling cost of the "50" are much less than for the other Jetex engines, and it thus is an ideal unit for the beginner, or for the experienced flyer who wants to try out this new form of power.

SPECIFICATIONS	Jetex jet engines		
model	50	150	350
ENGINE WEIGHT	.2 OZ.	.73 OZ.	2.5 OZ.
FUEL WEIGHT (min.)	.2 OZ.	.27 OZ.	.4 OZ.
TOTAL WEIGHT	.4 OZ.	1.00 OZ.	2.9 OZ.
THRUST (max.)	.6 OZ.	1.75 OZ.	4.0 OZ.
DURATION–one charge	12 SEC.	18 SEC.	12 SEC.
DURATION–two charges	—	—	24 SEC.
DURATION–three charges	—	—	36 SEC.
TORQUE	NONE	NONE	NONE
EXHAUST VELOCITY	1200 FS	1400 FS	1400 FS
OVERALL LENGTH	1⅝"	3½"	3¾"
MAXIMUM DIAMETER	11/16"	1"	1⅜"
EFF. WINGSPAN	12-20"	18-36"	32-54"

Note—Thrust of "150" with Augmenter Tube: 2.25 oz.

Helicopters

(*Continued from page 41*)

reaction in the other. Now then, why, if this system is so theoretically ideal, with equalized thrust, cycling and gyroscopic moments, has it not appeared in any machine which has *demonstrated* itself to be of practical commercial importance?

The answer lies in the fact that co-axial systems have two major requirements, and, from a practical standpoint, these requirements tend to be mutually exclusive.

First, it is desirable that the two rotors be mounted close together. The reason for this is that widely spaced rotors introduce great stresses in the mast and rotor system when the blades are cycled for forward flight, that is, when the blade angle is increased at the rear and reduced at the front each revolution of the rotor. The uppermost blade will require a greater pitch change than the lower blade in order to equalize the couple between the points of applied force and the center of gravity. Thus, if we wish to avoid excessive stressing of the rotor and mast system, the rotors must be quite close together.

Second, the rotor blades of a co-axial machine must be spaced with a large gap from one set to the other because otherwise they may clash together due to the flexibility of the rotors. Blade deflection due to gusts or even normal cycling pitch changes is great enough, ordinarily speaking, to make any spacing of the rotors less than one third rotor diameter apart definitely hazardous. Thus, the rotors must be far apart.

From these two requirements it can be

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seen that the only way out of the problem is not actually an "out" at all, for it will mean building the rotor systems impossibly heavy and rugged and thus losing many, if not all, of the advantages of the co-axial system. In the practical sense, then, this means that co-axial systems are limited in use to such cases as where it may be possible to stress the system all out of proportion to its size—models and tiny man-carrying jobs.

Now, what is this business about cyclic pitch? Did we not just describe rubber models which flew well without it? Why not merely eliminate cycling pitch from the co-axial system and fly forward by shifting the C.G. ahead?

The rubber models did fly forward by means of the stabilizing fin and C.G. shift. But don't overlook the fact that a rubber model flies with continuously diminishing power after the rotors come up to speed. This is very important because it meant the writer could eliminate cycling controls because of a characteristic of the powerplant. Just why this was so may be explained as follows:

Picture a purely hypothetical co-axial model helicopter in which the thrust *does not* vary, which has stiff, fixed-pitch rotors, and which is trimmed nose heavy to make it fly forward. All set?

The machine, because of the unequal loading of the disk (area covered by the rotors) begins to slide forward. It will not tip to either side since the advancing blade of one rotor, creating more lift as it encounters a relative wind due to forward motion has a balancing counterpart in the blade which is rotating forward on the opposite side. This, incidentally, is a major advantage of the co-axial configuration.

Now, as the machine gains speed we find that the front edge of the rotordisk is entering the wind while the rear edge is leaving it. This means that the rotor is lifting more at the front than at the back, and it will tilt upward, moving the machine into what is actually a stall—one of the few analogies which occur between fixed and rotating wing craft. Now this will happen no matter how much weight is placed in the nose, consistent of course with the ability of the machine to lift it.

Now, when this stall occurs, the helicopter will slide backward increasing the lift at the rear of the rotor disk until the model stalls tail up, whereupon it repeats the trick, oscillating back and forth with increasing amplitude and violence until it finally crashes.

The reason the rubber-powered models flew steadily ahead under C.G. shift is that the power gradually decreased as the machine flew forward and the damping fin provided a stabilizing surface which served to maintain the proper angle. Thus it might be said with considerable accuracy that the rubber models actually made use of the oscillating tendency of stiff rotors to secure forward flight and that they were successful in doing this because the oscillation was damped at proper time by the motor running out.

Or, to put it a bit differently, the co-axial rubber model helicopters with damper fins as developed by the writer were simply highly modified co-axially driven planes flown vertically. Have you ever seen Jim Walker do the Sabre dance? The principle is the same.

Thus, to fly forward in a co-axial machine, as in any other, requires that the pitch of the blades decrease in front and increase at the rear of the rotor disk. And, since we must be able to control the pitch of the rotor blade around the circumference of its sweep, we may as well abandon the co-axial configuration and its power transmission problems and go over to something simpler, the single rotor and torque prop. Either that, or power the rotor itself by means of tip jets or motors which eliminate torque effects entirely.

For most model work, and at this stage of the game, we will find the torque prop type more practical, since this gives us a heading and trim control and the boom helps to round out the design by balancing the weight of the powerplant which will be forward in most cases.

Which means we promptly dive headfirst into the rotor head business—but don't let it scare you.

The earliest successful helicopters used a refinement of what is known as the flapping, drag link rotor originated by Juan de Cierva, the autogiro inventor. To Cierva's basic invention were added mechanisms to secure collective and cyclic pitch control and with such an arrangement the first man-carrying machines flew.

This system (Fig. 2) makes use of a hinge between the blade root and rotor mast. This allows the blade to flap up and down relative to the plane of rotation and was originally introduced in the autogiro to permit the machine to fly forward without tipping over due to relative wind differentials.

Soon after this was invented it was found necessary to add another hinge which would allow the blade to swing fore and aft, since, as the blade coned upward on the advancing side it would tend to lag behind the retreating blade, thus setting up terrific stresses in the flap hinge. This drag hinge then had to be fitted with a dynamic damper—a gadget similar to the device which closes doors without slamming —to absorb the jolts and shocks that such a system was heir to and to assure a correct nominal circumferential position of the blade.

This system is in wide use among full-scale helicopter makers but it has some limitations in that it is not truly stable, although quite flyable with a competent pilot.

As far as model helicoptering is concerned the system is of interest chiefly as background material. In practice it proves tricky to build, fragile and easily misaligned, and it falls down on a most important model requirement in that it will not fly "hands off."

As a matter of fact, it is not even a satisfactory free flight autogiro arrangement as the writer discovered some years ago, and this lack of satisfactory flight characteristics started a series of experiments which led into contact with a type of rotor arrangement that would perform satisfactorily on an autogiro.

Initial experiments with articulated rotors on rubber model autogiros resulted consistently in dismal crack-ups at the end of erratic flights of a few feet. Apparently the fault was somehow connected with the articulation that was supposed to promote flight stability. So we committed heresy. We stopped articulating the rotor blades.* This was better, but still not good, and then came the inspiration—why not articulate the blades in some other fashion, so that the effect would be the same, but the big bounce would be taken out?

Why not, instead of allowing the blade to flap upward, allow it to rotate spanwise—that is, instead of letting the tip fly up, let the trailing edge flap upward?

A new rotor was built with the blades spring-loaded against their spanwise axis at zero pitch, and since the rotor was stiff, tip to tip, the mast which held the rotor was jointed, or articulated to the fuselage to prevent the transmission of disturbances back and forth. Aerodynamic pressures would result in the slight negative pitch angle necessary for autorotation, and a sort of automatic cycling pitch would be obtained as the advancing blade flattened to the relative wind, which would flip the trailing edge down as the blade passed in front and started back on the downwind side.

It worked.

*Louis Garami built a successful non-articulated, non-feathering giro at about the same time which flew by using torque of the motor to counteract the progressive tipping of his stiff four-bladed rotor. This appeared in Air Trails.—RLC.

(To be continued in subsequent issue.)

Soviet Fighter

(Continued from page 19)

in 1947.

The appearance of the Mikoyan fighter ties in with earlier intelligence reports that the Kremlinites had instructed their top-line fighter designers to concentrate on the development of all-weather machines since their requirements in the day interceptor cate-

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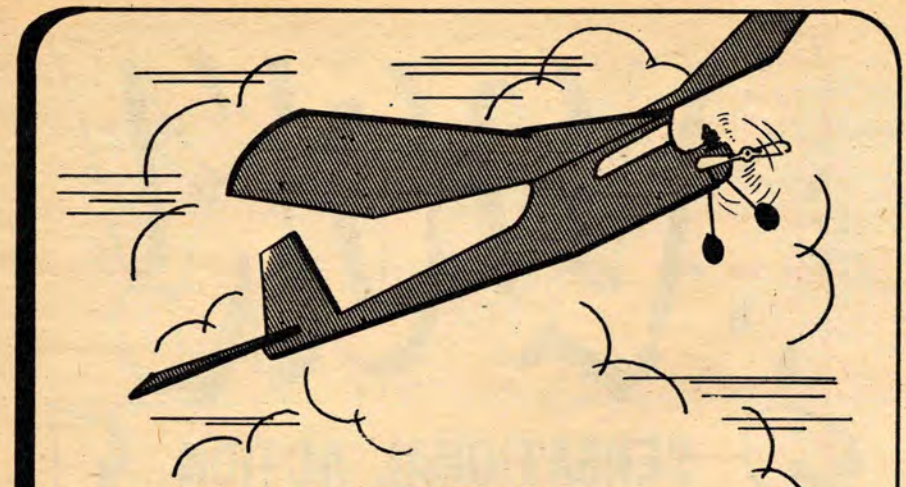

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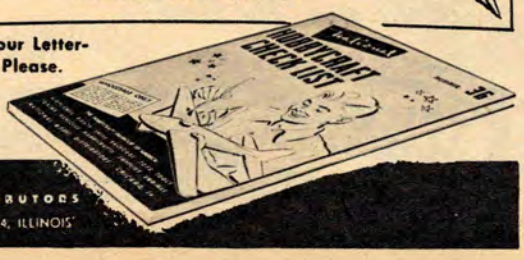

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gory were proved adequately filled by the MiG-15's.

The accompanying illustrations reveal the salient features of the airplane. Embodying the now common swept-back planform and featuring broad chord wings which, in view of the airplane's size, suggests adherence to the formula of low wing, span, and power loadings used so successfully in the MiG-15, the Mikoyan fighter appears to be comparable in function to the Northrop F-89 Scorpion, though smaller and lower powered.

It appears to possess roughly 25-degree sweep angle at 25 percent chord (30-degrees at the leading edge), and shows no radical departures in design approach. The slim, oval-section fuselage carries search radar antenna in the nose. Eye-witnesses who have seen the Mikoyan fighter low down have referred to this radar housing as being blue-tinted, and have reported seeing four gun ports below the fuselage nose, aft of the nosewheel housing. If built-in armament follows current Russian practice, it probably comprises two 25-mm and two 37-mm weapons which, although ineffective in high-speed fighter-*versus*-fighter combat owing to slow fire rate, can rip up a bomber with ease.

The forward-mounted cockpit houses a crew of two in tandem ejector seats and is enclosed by a "bubble" style perspex hood with integral metal stiffeners. The slim, tapering fuselage is surmounted by a large, swept fin and rudder assembly, which carries the small swept tailplane near to its tip.

The twin turbojets are mounted at the fuselage sides, above the wing root, following the style set by the Avro Canada CF-100, and the size of the housings would suggest the use of a developed version of the axial-flow M-004H, derived from the wartime Jumo 004B but having three extra compressor stages and a two-stage turbine.

This unit is known to have entered production in Russian plants during 1947, at which time it was delivering 4,400 pounds static thrust, but it is likely to have been developed to give something in excess of 5,000 pounds thrust, and bearing in mind the comparatively small size of the fighter, a total thrust of upwards of 10,000 pounds provided by the two jets should be adequate to push the airplane along at speeds in the very high sub-sonic range without recourse to such methods of boosting as afterburning.

The fuselage-side style of jet mounting offers a number of advantages in that it leaves the rear fuselage free to accommodate large fuel tanks while the jet units are easily accessible for maintenance and can be quickly lifted out for replacement. The machine photographed carried small wing-tip fuel tanks, but as their existence has not been mentioned in other reports they are probably not standard. Guide rails seen fitted under the wings presumably carry air-to-air rocket missiles.

CAP Cadet

(*Continued from page 8*)

hungry eyes on airworthy planes held in Reserve, including a flock of well-kept Stinson L-5s.

More Reserve guidance of CAP is being encouraged. This should make it easier to get the loan of planes and other Air Force property which veteran Reserve officers are trained to operate and maintain.

Pennsylvania has been among the first states to start a joint CAP and Reserve program, after the initial unit was formed in the District of Columbia.

Col. Charles Skeele, former president of the Reserve Officers Association, commands the experimental Reserve District Office. In cooperation with the CAP Wing, commanded by Col. Philip Neuweiler, and the State government, represented by Miss Elizabeth Warnock, Reservists throughout the state have been urged to join CAP and

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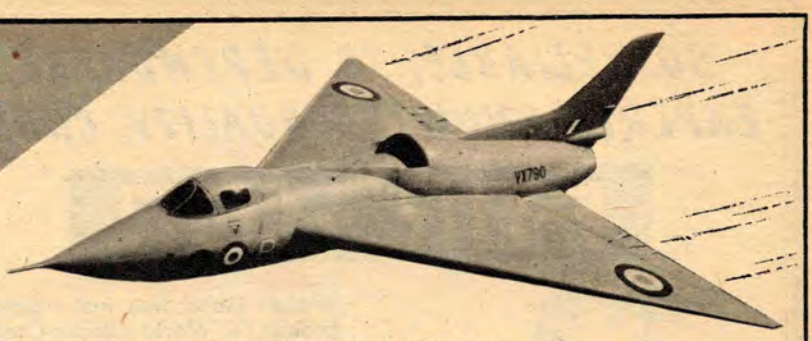
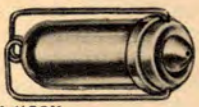


JETEX JET ENGINES



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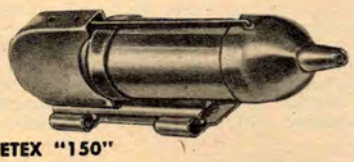

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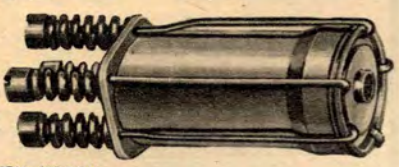

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train units of CAP Cadets.

Here's a method that can be used in any community to start new Cadet Squadrons or to get high-type instructors.

Glider flying was in store for the lucky CAP Cadets who went to three of the Cadet exchange countries this summer. For France, Switzerland, and Spain, the U. S. boys who went all had to be rated here as private pilots to qualify for the 10 or 12 hours they will get in gliders on their trip. The foreign cadets from the three countries will receive powered-plane training during their visit here.

A busy summer, one of the busiest since the war, is just closing. In addition to the international Cadet exchange, the first national aviation education workshop was held at the University of Colorado. The National Drill Competition was at Mitchel AFB, N. Y., and the international is being contested with Britain and Canada on the opening night of the Minnesota State Fair.

Results from the CAPC coupon, printed in this CAPC section in every issue of Air Trails, have had an important effect on the program.

Due to the shortage of instructors, the CAP Cadet Corps has been gaining slightly in the past year and now stands about 45,000 total, or less than half of its 100,000 goal.

Since hundreds of inquiries are received each month by young people who want to join, it appears that our support has helped hold the line through the difficult years.

Now that Air Force aid is to be forthcoming on a more generous scale, sign up a friend today and build the program to its full 100,000 goal.

—COL. KENDALL K. HOYT,
Founder of the CAP Cadet Program

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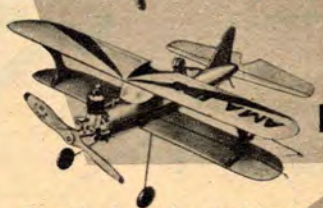

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R/C

(*Continued from page* 10)

omitting the lever switch, and attaching the control handle onto the variable resistor. Moving this then gives the necessary variation between signal-on and signal-off to work the rudder mechanism. With this simple system, the pulse length and the speed both change as the resistor is shifted. In most cases this doesn't matter. If you want to be able to change the speed and pulse length independently, we've worked out the arrangement shown in Fig. B. Here two relays are used, one of which controls pulse speed, the other the length. There is very little interaction between the two variable controls; the steering handle is attached to the pulse length resistor, of course.

While we're on the subject, another of Paul's cuties is shown in Fig. C. This one is for use with the Bonner Compound escapement, and automatically counts the correct number of pulses to give left or right as needed. When three pulses are wanted to get motor control, just flip the handle left, then right without stopping in neutral. On this one, he recommends that the relay points be set as far apart as possible, with weak spring tension. Old 45 volt batteries that are no longer safe for receiver use are utilized. George Sweet of Beloit, Wis., writes he has used a circuit similar to Fig. A for several years on his planes with very satisfactory results.

The contest results are beginning to come in; here are some we have received. R/C event at the Pacific Coast Championships was run off with procedures that R/C Director Schumacher will use at the Nats. The day was very hot with not much wind. Newly cut hay still lying in rows on the field didn't help in precision landings! Howard Bonner directed event for which there were 11 entrants. Winners: 1—Bill Dean, modified Rudderbug, homemade reed receiver on 50 mc. 2—James Jensen, modified Foxworthy design with Arden diesel, RK61 receiver and escapement on rudder. 3—R. Schumacher, flying original design, Citizenship radio with Bonner Compound esc.

Another contest was held by Bridgeport (Conn.) Aeronuts after being rained out. Ten entrants despite rain in morning. Winners: 1—Leonard Poor (Boston), modified Super Brigadier, O&R 19, Citizenship radio. 2—Albert Arndt (Bridgeport) flying original with Cub .074 and 180 sq. in area. Control Research equipment. 3—Hank Schiffer (Meriden), Radart with Frog diesel, Aerotrol R/C.

Mirror Flying Fair had R/C entry list of around 175!!! About 40 of these showed up on the field and there were 12 who made official flights. In view of fine weather no one can figure why more did not fly. Three judges were ready to handle simultaneous flights on 27¼, 50, 465 mc. Winners: 1—Frank Yuhaz (Linden, N. J.), Robot with 27¼ R/C. 2—Van Gibson (Syracuse). 3—Fran McElwee (So. Plainfield, N. J.) flying his own design, the Robot, with 27¼ equipment. At this meet, there were about six fliers on 27¼, five on 50 and one on 465 mc.

It seems there is considerable interest in the type of equipment, frequency, controls, etc. utilized by various contest winners. If readers feel it worthwhile, we will try to include this data from now on, even though it takes up space that we can ill afford. How about it?

Q. & A. Readers are still having trouble with the F.C.C. on getting their licenses for 27¼. James Grundy was informed by the Phila. F.C.C. authorities that it was absolutely illegal to adjust his transmitter unless he held a second class commercial telephone license. From other comment they made, it was apparent that the directives from Washington had not filtered down to this office at the time. Sufficient to say that *you* can make, build, adjust and operate your own 27¼ transmitter, either a kit or an original job, after you have secured the station license by sending in the *Overprinted* Form 505 to the F.C.C. The rules for this were announced officially by the F.C.C. from Washington on March 24, 1952.

Frank Volin, 4065 3rd Ave. Bronx 57, N.Y. wants the circuit of the 3-tube receiver made by James Jensen and illustrated in this column, May issue. Circuit and full description may be found in Radio & Television News, Sept. 1951. Frank would like to get in touch with other R/Cers; he is W2YRJ.

Raymond Buchanan, Strawn, Tex., wants info on converting Aerotrol 50 mc. equipment to 27¼. Berkeley has conversion kit for the receiver. Transmitter is tougher job, since it requires quite radical circuit changes, addition of crystal, etc. We will have dope on this in a forthcoming issue, though.

Technical Matters. Dale Springsted says he feels the K.C. Cutie (A.T., Jan. '52) makes an ideal small size R/C job. He has one fitted with a Mills 0.75 diesel; total weight is 18 oz. He uses a 2-tube Control Research receiver, with an escapement in rear of fuselage. Stab and rudder are fastened with rubber bands. The glide is a lot slower than had been expected and very little rudder is required for tight turns.

Readers may have noticed our use of the term "27¼" earlier in this Column. This is a suggestion from Walt Good, and seems a lot easier than to use the full terminology, 27.255mc.

Frank Schmidt, a really avid experimenter from Erie, Pa., has worked out a fuel mixture to use with glow engines, based upon white gasoline. The compression must be around 28 to 30 pounds and to check this he has soldered a small pressure gauge to a defunct glow plug. The coupling must be kept as short as possible, especially for testing the smaller engines. Cylinder head is machined off or gaskets added to get correct compression. Arden and K&B 19's are just about right. Fuel is 2 parts white gas, 1 part SAE 60 oil, and ¾ to 1¼ parts nitropropane—the variation in the latter to make up for slight differences in compression of different engines.

Frank says engines run just like spark ignition jobs on this concoction, speed control with dual needle valves is good, a small amount gives a long run, and best of all, the ship stays clean and dope and glue don't dissolve.

Commercial News. A simple switch control box for operation with escapements will soon be available from Control Research, Box 9, Hampton, Va. Exact price not settled yet, but will be around $5.00. It will be for use with the self-neutralizing style escapement, and can be attached to any transmitter, of course.

A new escapement, very rugged and simple, has been developed by Berkeley Models, West Hempstead, N. Y. It is mounted by a single hole and the rubber hook shaft goes right through the mounting bushing. This unit weighs 1.3 oz. and requires only 200 ma. at 3 V. for operation. It will be sold only in finished form, for $3.95. Berkeley now carries low cost meters for both transmitter and receiver. The former has a range of 0-50 ma. and sells for $2.75. Receiver meter reads 0-3 ma., sells for $3.50, and since it is of the high resistance style, a resistor is furnished to connect to your receiver test jack.

New additions to the E.D. line of R/C equipment have just been received by Polk's Model Craft Hobbies, 314 Fifth Ave., New York 1, N.Y. Deluxe unit is a three-reed receiver and matching transmitter, which comes complete with a neat control box; antenna, and tubes are also furnished and the unit is crystal controlled on 27¼mc. Price for this complete outfit has been set tentatively at $115.00. The triple-reed unit and the polarized sensitive relays will sell separately for about $20.00 and $6.50 respectively. Final prices had not been settled upon at the time this Column was written. The old E.D. transmitter will be superseded by a new one with printed circuit and crystal control; price complete except for batteries, but including telescopic antenna, key and cord, will be $29.50. Polk's can also supply 3A4 and 3A5 tubes, crystals, and many other R/C supplies, including four separate styles of E.D. escapements. All E.D. components are sold in finished form only—there are no kits.

—HOWARD G. MC ENTEE

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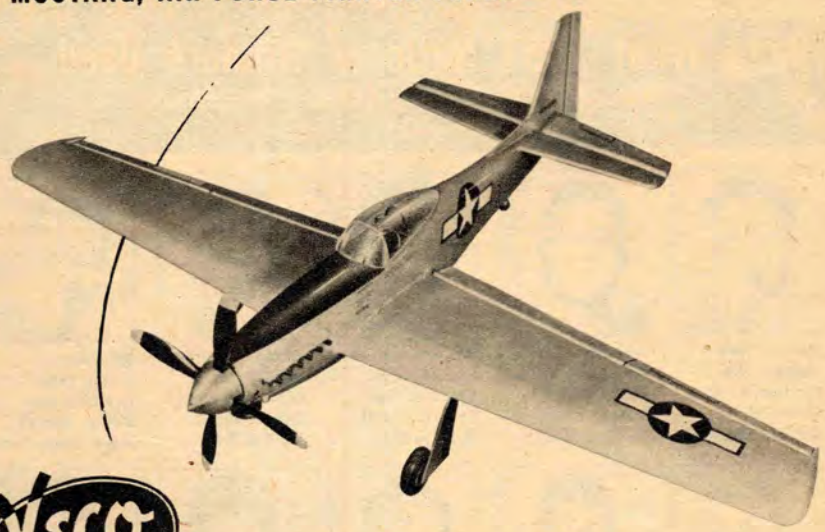

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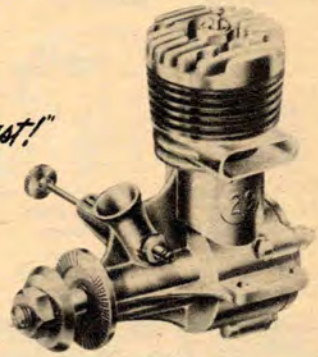

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Cl. C Sr., Triumph 49
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Ernie Shailor
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Free Flight Gas
Cl. B, Open, Forster 29
10-3½ Top Flite

Curtis Franke
San Antonio, Texas
Free Flight Gas
Cl. C, Jr., Torp 32
11-6 Top Flite

Tommy Davis
Atlanta, Ga.
Control Line
Spd. Cl.A, Jr. McCoy 19
7-9 Power Prop.

Don Tune
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Cl. AA Junior, Free Fl.
Torp. .049
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Norwood, Mass.
Open Stunt
Fox 35
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Don Ferguson Jr.
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Senior Stunt
Fox 35
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6-4 Top Flite

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San Diego, Calif.
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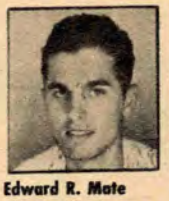
6-3 Top Flite

Bob Lutker
Ft. Worth, Texas
Open-Team Racing
K&B 29
9-9 Power Prop



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Air Adventurers

(*Continued from page* 16)

matic electronic flight and fire control systems for aircraft.

Those engineers engaged with work along atomic energy lines and the study of nuclear reactors for power, are "majoring" in the vast problem of heat transfer and radiation shielding.

Electro-mechanical Engineers are working intently to perfect such things as integrated flight-control-fire-control systems for ultra-high-speed aircraft and such complex items as a completely self-contained "brain" for guided missiles to enable them to reach a target accurately without outside direction or interference from enemy countermeasures.

Along with these electro-mechanical engineers experts in mathematical analysis, mechanical design, radar and electrical systems work hand in hand to complete these complicated projects. In this group too are experts in miniaturization of radio and electrical units. Often an electrical, radar, or radio unit must be reduced to one tenth its previous weight and size for special installation in aircraft or guided missile, and it is the responsibility of these experts to condense these units to meet minimum space and weight requirements.

In the Aerodynamics Section of the industry the technicians work on several design types of aircraft: transonic, supersonic and hypersonic. As a matter of fact aerodynamicists have discovered that previous knowledge and experience are of little actual value and use in the designing of future ultra-high-speed craft. They are continually confronted with new and puzzling conditions to which they must find the answers.

Propulsion Division Engineers include experts in mechanical engineering, physicists specializing in electronics and instrumentation, chemical and hydraulic engineers. Here too we find safety engineers working with all of the personnel to assure safety in handling such dangerous chemicals as red fuming nitric acid, hydrazine and hydrogen peroxide.

Just to show how important these safety engineers are to such work is the fact that at one plant alone, North American Aviation Inc., over four and a quarter million man hours have been spent in rocket motor tests (involving such chemicals) without serious injury to a single person involved. Here too, new designs for jet engines are developed and tested for aircraft as yet unbuilt, requiring the services of heating engineers, hydraulic engineers and metal experts.

In the Preliminary Analysis Section of engineering, all designs come for inspection and evaluation as to probable or possible value, logistic possibilities and practicability of quantity production. Here every part of a projected aircraft or missile is analyzed in preliminary plan to see if it is actually practical as suggested or proposed before more time is spent upon it developing it in detail. The production of

(*Continued on page* 65)

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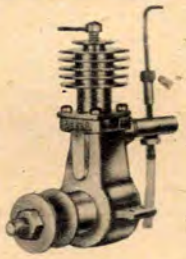

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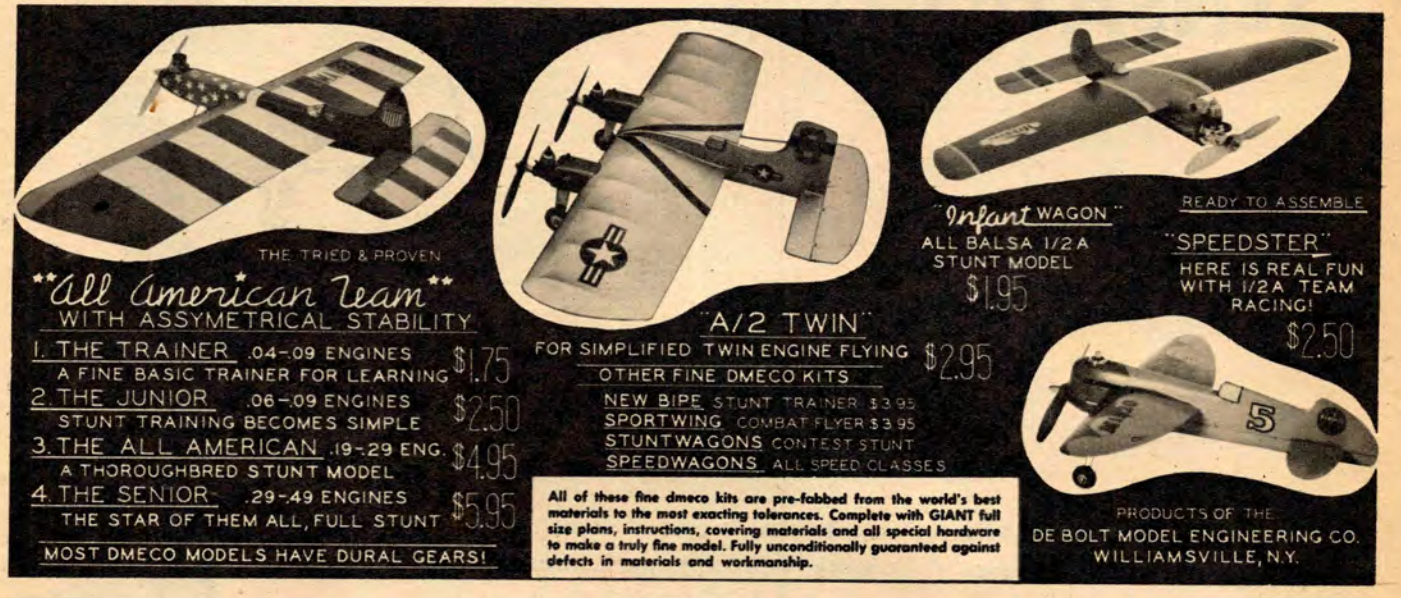

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■ The Wakefield Semi-finals at Bakersfield proved full of surprises. The two top men, Joe Bilgri of San Jose and Sid Seldon of Tacoma bettered their nearest competitors by over two minutes.

To eliminate the California thermals, those who participated awakened faster than we have ever seen model builders open their eyes. The entire countryside was lit up with one brilliant flash due to the Atomic bomb explosion at Las Vegas; as one prankster put it, that sure was a big flash bulb. One energetic modeler had been taking pictures in the predawn light. It required some moments for those assembled to completely understand what had happened.

"Pop" Robbers (with the able assistance of the Bakersfield Club) and "Mom" sure did a swell job of giving the fellows all opportunity to show the type of airplanes they entered.

Special kudos go to Francis Stewart and Clinton Merrill for organizing and getting out, at that early hour, that energetic gang of Bakersfield model builders who did all the dirty work. One can't imagine the anguish George Cassellberry went through as take-off judge in calling those close ones "assist or "not assist." George, incidentally, is to be contest director of the Los Angeles eliminations next year.

Of all the flights made in the contest the most spectacular by far was Joe Bilgri's first with his high-powered geared job which looped on its take-off, much to Joe's dismay and to Manny Andrade's anguish, since Manny was flying for "Dry Ice Broken Foot Joe." It leveled out though, then climbed to an amazing height which no other ship got close to, then into a very flat straight glide, due to a wing shift during the loop.

Joe had an easy six-minute-plus flight which was knocked down to just over four when it stalled in. Joe's other two flights of well over five minutes were more than ample to place him first. He used his last year's long job on his last two flights.

Sid Seldon had another of his very clean ships, another diamond design which put in three consistent flights of well over four minutes to beat out Hal Roth by over two minutes.

Hal Roth who was third put up three very good flights, missing mostly because his first flight was slightly less than three minutes. Don Donahue placed fourth and would have had much better time but for a broken prop on his second take-off; consequent change of props lowered his average considerably. Hank Cole whose first flight was out of sight straight downwind in less than two minutes was flying a new ship with a fin pylon for cross section. Hank's last flight of over five minutes was the only other maximum flight in the entire contest.

Some very classic remarks were made. Ed Slobad's "Better give me a delay on this one—maybe next year" after Dick Baxter's job had crashed through Ed's while he was winding, is one for the books. And Lt. Ted Bieber's sad "Gosh, I didn't realize it" after getting back to the field to learn that he had assisted—which eliminated him from the trip to Sweden. Ted would have placed third if his first flight had counted.

We made a survey of all the models flown and came up with some very interesting facts. Wingspans varied only six inches while areas were between 208 and 228 square inches; stabs varied from 64 to 80 square inches. (*Continued on page* 70)

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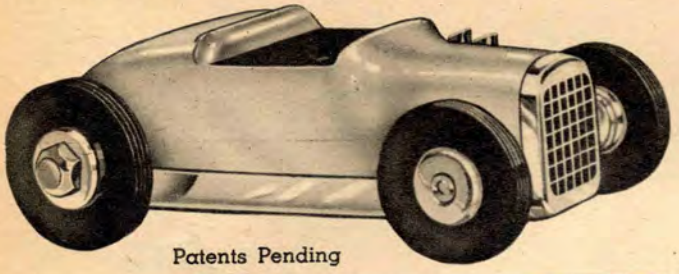

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Air Adventurers

(*Continued from page 62*)

the various parts and units is investigated in conjunction with availability of materials and expenses involved. Then the whole project is discussed for its strategic value.

The Structural Design Engineers are responsible for not only the design of aircraft and missile airframes but for test equipment jigs, test stands for jets and rockets (engines as well as actual aircraft), launching ramps and towers for missiles, observation posts and fire protection equipment. They, too, design fuel and oxygen supply systems.

Production Engineers have the final say as to whether or not a specific project has "productibility"—whether it can be produced in quantity with efficiency and economy. They decide such matters as production lines, sub-contractors, sub and final assembly lines and manufacturing techniques.

In all of these many phases of the "aviation engineer" of today we find attending experts and technicians of varied skills contributing important help, to make the engineers work safer, faster, and more efficient. There must be tool designers; motion picture and still camera men to record instrument readings, work techniques, and important steps in production and research; material procurement experts to see that there is a steady flow of vital materials to the engineers.

There are draftsmen by the hundreds and blueprint experts by the dozens (some aircraft companies produce as many as 15 acres of blueprints a week); writers and illustrators to prepare text books, service and operational manuals and reports; test pilots to prove that the finished aircraft is as good or better than the designers claimed. There are even crating and shipping engineers to see to it that replacement parts or new equipment reaches its destination in perfect order.

(*Continued on page 69*)

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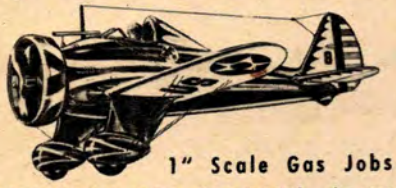

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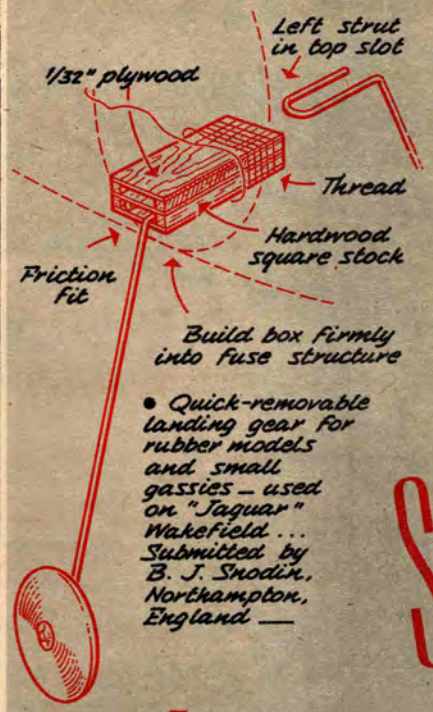
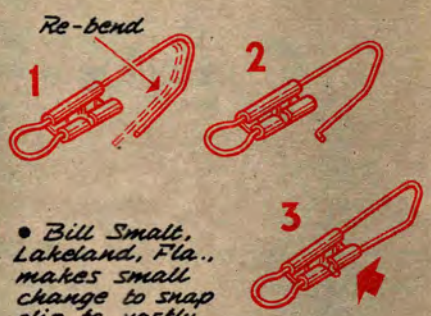
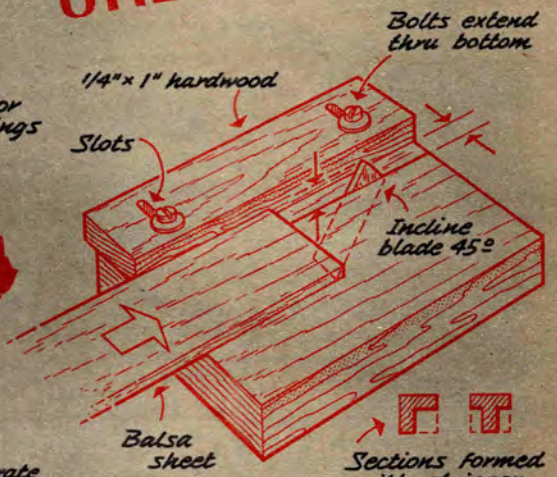




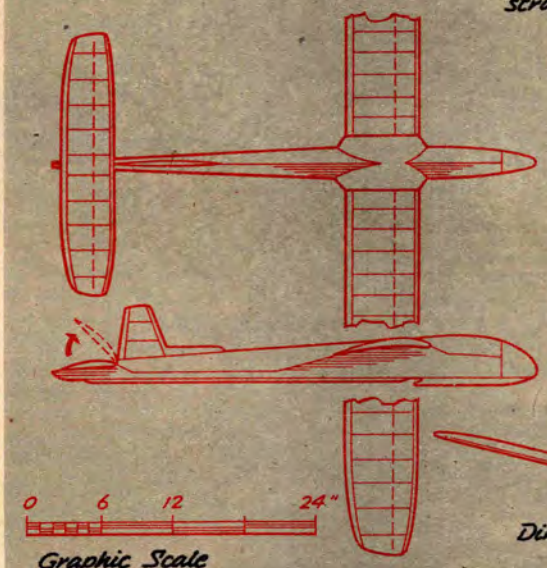
• Bill Smalt, Lakeland, Fla., makes small change to snap clip to vastly increase its strength —

• Quick-removable landing gear for rubber models and small gassies — used on "Jaguar" Wakefield... Submitted by B. J. Snodin, Northampton, England —

• When colored dope is not used frequently, pigment tends to separate from vehicle... Alden Zepp, Mt. Prospect, Ill., places several "agitators" in bottle to make mixing easier —

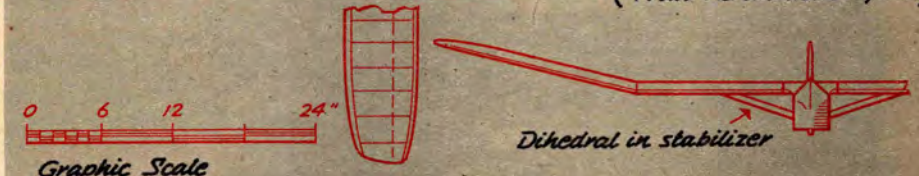


• Balsa stripper, used by George Woolls, Bristol, England, has variable width and depth; utilizes Schick or similar razor blade. Channels, angles, T-sections for efficient structures can be made easily —

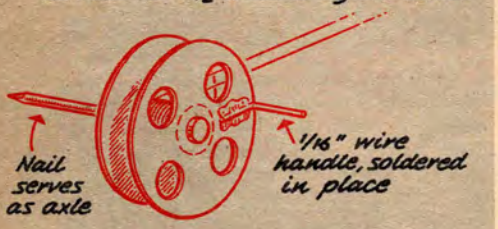


• Fine example of International "A-2" towline glider design is "Faun" A-2 by J. van Hattum, Holland. Ship spans 66", is 44" long. Features pop-up stabilizer dethermalizer, plug-in wing panels —

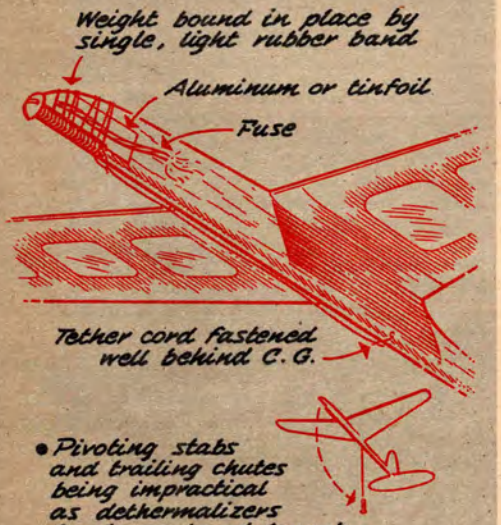
(From "Aeromodeller" plan)



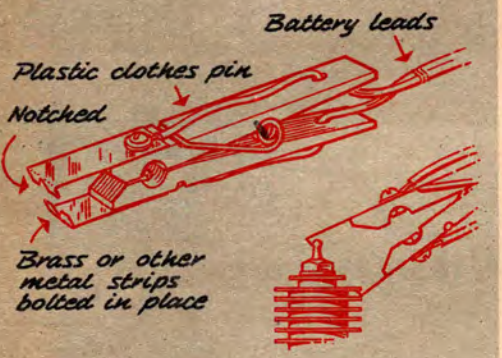
• Ron Schuver, Van Nuys, Calif., uses discarded typewriter spool as reel for A/2 linen or nylon lines.



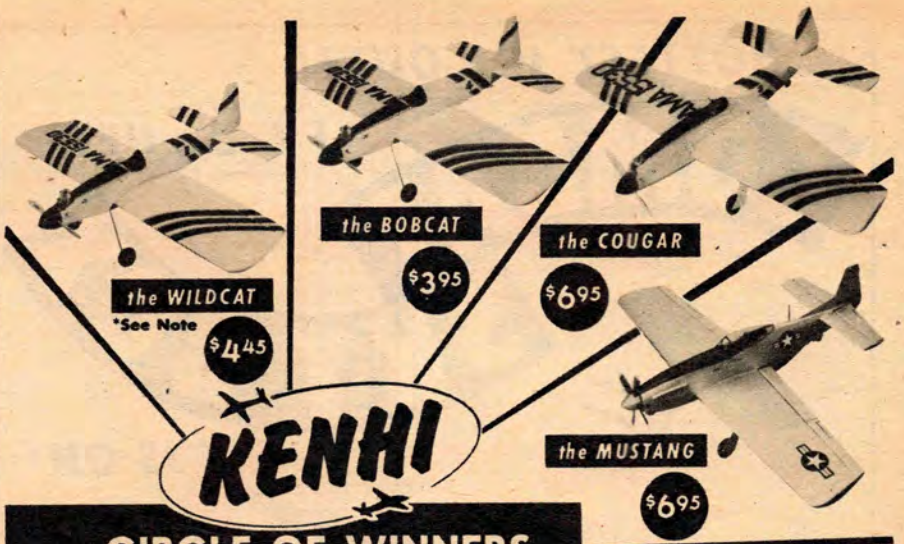
Have you developed something new in construction, control, or flying that might interest other modelers? Send a rough sketch—we'll redraw it and pay $5 for each one accepted. Sorry, we cannot acknowledge or send back any submissions.



• Pivoting stabs and trailing chutes being impractical as dethermalizers for large hand-launch gliders, Jack Venaleck, Fairview Park, O., dreamed up this clever weight-shifting arrangement —



• Universal glo-plug booster connection devised with spring-type clothes pin is practicable suggestion of R. G. McCarthy, Lockport, N. Y. — Fits all glo-plug and engine types...



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SPECIFICATIONS	WILDCAT	BOBCAT	COUGAR	MUSTANG	BEAVER
Wing Span	39 in.	39 in.	51 in.	48 in.	44 in.
Length Overall	30¼ in.	30¼ in.	36¼ in.	36½ in.	26 in.
Wing Area	330 Sq. in.	387 Sq. in.	412.5 Sq. in.	372 Sq. in.	233.375 Sq. in.
Fap Area	55 Sq. in.		137.5 Sq. in.	84 Sq. in.	
Total Wing Area	385 Sq. in.		550 Sq. in.	456 Sq. in.	
Air Foil	HJ-03515	HJ-03515	HJ-03515	HJ-04015	HJ-10400
Finished Wt. (Approx.)	2¼ Lbs.	2 Lbs.	2¾ Lbs.	2½ Lbs.	6 Oz.
*Wing Loading	.093 Oz.	.083 Oz.	.084 Oz.	.087 Oz.	.0257 Oz.
*Wing Loading with Occupant					.0428 Oz.
Class	A-B	A-B	B-C	B-C	½A
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My Favorite Model

■ One favorite model I have is a Half-A and A contest free flight design with a projected wing area close to 200 sq. in.

It is not only a desire for originality of configuration that prompted me to deviate from the conventional pylon

contest model, but also stability. This particular design is virtually spin-proof and capable of utilizing extremely high power to maximum advantage. Yet the model is unusual in that high performance can also be achieved with a minimum of power. The primary reason of which, I'm certain, is the low drag laminar flow airfoil section of original design that was used.

Thin sheet balsa was employed on the upper surface, extending beyond the highest point of the upper camber which was 60% aft of the leading edge. The under camber being flat, all that was required was a large leading edge to account for the slight curvature forward. Utilizing sufficient bulk in the leading and trailing edges of the wing made it unnecessary to employ spars, thus simplifying the wing construction.

Structurally the fuselage is not unusual, but it is extremely conducive to streamlined and sturdy construction. It is made entirely of sheet balsa with bulkheads. The model weighs barely seven ounces with the .065 Royal "Spitfire."

I've dubbed the model "The Forerunner."

—PAUL DEL GATTO

Air Trails will pay $10 on or before publication for a picture of you and your favorite model and brief, typewritten comments why it is your favorite, if used. Send entries to Air Trails, Favorite Model Dept., 304 E. 45th St., New York 17, N. Y. Sorry, no entries can be returned.

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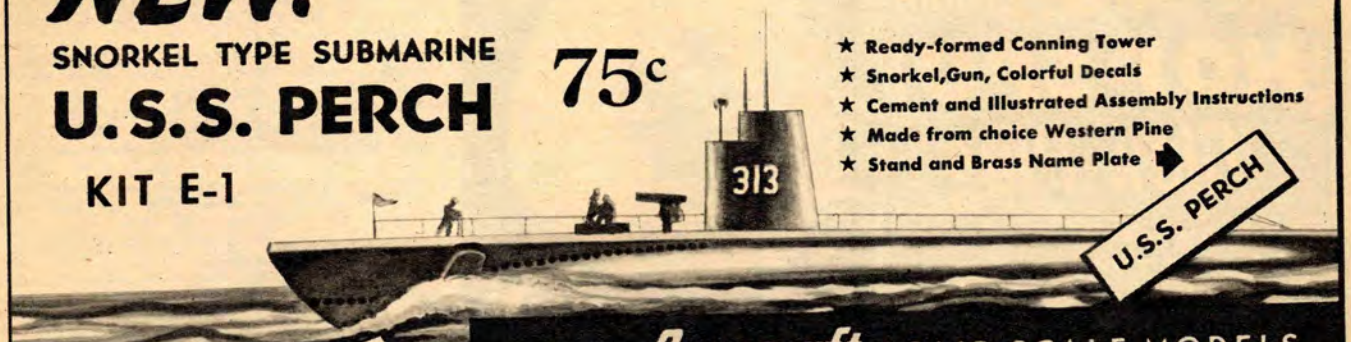

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Air Adventurers

(*Continued from page 65*)

Each branch of the engineering division of any aircraft company is expanding and fast. W. T. Bowcott, of McDonnell Aircraft Corp., says: "The advent of jet propulsion has placed a tremendous emphasis on the aircraft engineering function."

Structural Engineering includes sub-divisions such as fuselage engineers, empennage engineers, wing engineers, and landing-gear engineers. Armament engineering requires close cooperation with structural engineering to assure that there will be room for the guns demanded by the design and that the airframe will be able to stand their firing over extended periods. Each branch of engineering must work closely with all others.

One type of expert that will always be assured of a good future in aviation is the mathematician. There will never be too many of them according to most manufacturers. Even with the new analog and digital automatic computers the services of expert mathematicians will always be in demand for they will be working in a more advanced field on problems far ahead of formulae and equations for the past few years.

Right now is the time to plan your future in aviation. Check over the various types of engineering we have covered, write to manufacturers for additional literature and position possibilities for the future and, above all, keep your marks in mathematics and physics right up at the top.

You never can tell when what you pick up and remember today may be just what you must have on some tomorrow in your future, or what friendly contacts you make now through mutual interest in aviation may be a valuable lead to a future later on. Keep your eyes high, along with your hopes and marks in school and there will always be a future ahead, for such as you Air Adventurers, our aviation engineers of tomorrow.

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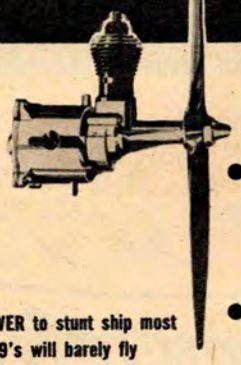

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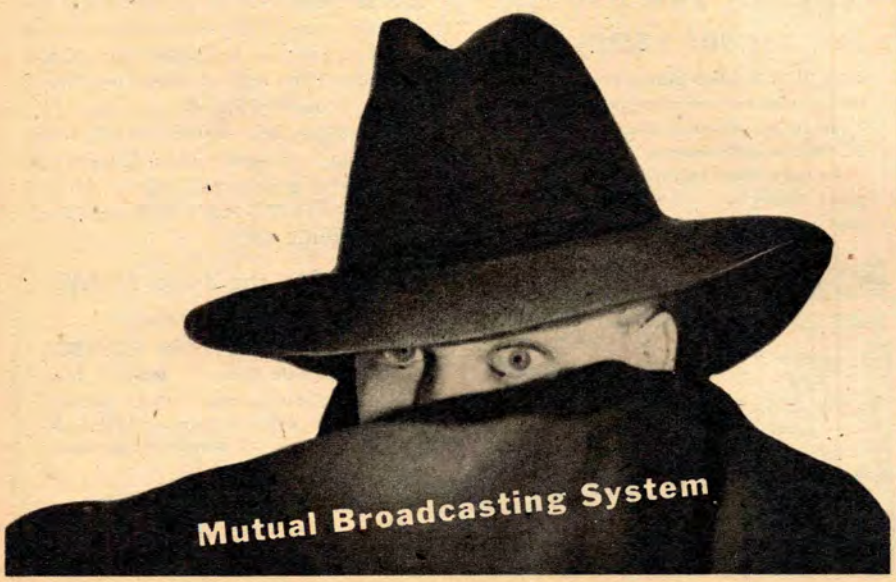

Dottie

(*Continued from page 53*)

pinned while drying so that it will stay in alignment with the wing. After this has dried the rudder is cemented on.

When the glider is thoroughly dry sanding sealer is applied with a brush over all surfaces, and after drying again it is sanded first with No. 400 paper and then with No. 600. For ceilings higher than 75 feet the entire glider can be given a second coat of sealer and for ceilings above 100 feet the wing can be given additional coats with each coat sanded smooth with No. 400 sandpaper. The tail surfaces should never be given more than two coats, for it builds up the weight at the wrong end without doing any good.

The finished glider should be balanced two thirds of the way back from the leading edge by adding clay to the nose. Most builders seem to have their own style of launching, but some usually have a little trouble getting a small circle and still keep their launching adjustments. This can be done quite safely by adding a small amount of clay to the left wing until the desired circle is reached. Properly made, this glider should weigh approximately six-tenths of an ounce with clay for a 75-foot ceiling, and can weigh up to an ounce when flown under ceilings of more than 100 feet.

Western

(*Continued from page 64*)

Fuselage length varied the most, there being over 36 inches difference between Ed Slobad's 33-inch ship and Hal Roth's 69-inch-long ship. There were almost as many twin rudders as singles, C.G. variance was large, from 55% to one inch behind the trailing edge. Airfoils were of great variance, with originals more than holding their own.

Prop diameter and pitch varied considerably due to Dick Baxter's 4:1 gear job of 14-inch diameter. Hal Roth had the largest —28 inches in diameter. Pitches varied between Baxter's 22-inch and Frank Cumming's 36-inch pitch. Rubber length due to gears was great unless one considers total length, whereupon they average quite long as seen from the very close total rubber weight.

Taking an average of all planes flown, we came up with a ship which looks very good, the specifications being as follows: span 45.9 inches, area 216.1 square inches, dihedral 4.5 inches, stab area 73.6 inches, fuselage length 50.72 inches, between hooks 41.5 inches. The prop is 20.2 inches in diameter and has a 26-inch pitch. Power would be about 16 strands 54 inches long, the model should weigh 3.8 ounces and carry 5 ounces of rubber; it will have a two bladed folder and a retracting gear. This seems like a very good model, so we shall build it. It should do well over four minutes, and who knows—maybe five.

Joe Bilgri and Sid Seldon certainly deserve sincere congratulations and the best wishes of the entire gang on their trip to Sweden.

The Pacific States Championship contest

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provided its rightful share of interesting flying happily handled by John Bollinger and the Southern California Model Association. The day of PAA-Load, glider and rubber events being topped off by an ultimatum of "No fuses allowed," by the Los Angeles Fire Department. Scuttlebutt has it that RKO who has a studio near the Supulveda Basin has become more than a little incensed with the wandering free flight models which continually land in their lot.

The try to get gas models eliminated met with complete failure when an energetic group of modelers demonstrated to a fire department inspector that there couldn't be any fire danger from their engines.

Needless to say, quite a few fellows did not even bother to assemble their planes on learning of the edict, while countless others put them back in their cars. The PAA watches, however, were such an incentive that the guys flew anyway, putting in some rather remarkable flights and some very high times. When Bolly was handed the ultimatum of no fuses allowed, he so rightly lowered the flights limits to five minutes in order to save a lot of ships, which it did, when the thermal flyers flew when they weren't around.

Up at Martinez, the WAM held a big control line event with lots of fine flying taking place. Vic Garner continued his winning ways in Proto Speed, winning both A-B and C-D. Herm Shiman pushed Vic very closely in C-D, being only 6 mph behind. Bernice Jaynes proved to be top woman flyer again, winning C-D beginner with a very fast 134 plus and winning women's stunt.

Don Wood, who is only 13 years old, won the Root trophy for beginner stunt, scoring 307 points—a real hot flyer. Rudy Avon pushed sportsmanship to the fore in asking for his stunt points to be retotaled, ending up in third place instead of second.

Ralph Kummers, a real old-timer in this modeling game, who is now working for Stan Hiller, contacted us recently in regard to an International Helicopter Contest to be held annually. What Ralph wants is a workable set of regulations which would attract the model builders to building a free flying helicopter that would stress construction and originality.

Preliminary contests with some of the West Coast's outstanding model builders have indicated a very welcome reception, with what we think are some very good ideas. Judging of such a ship for design and originality presents a problem, but one which we think can be surmounted with not too much trouble, since the idea behind this competition is to stimulate interest and knowledge in helicopter flight.

Flying suggestions have in most cases taken the criterion away from duration and have instead emphasized attitude and a possible distance flight. One suggestion has been that the models should fly a triangular course to more clearly demonstrate flying capability and also that they must clear a height obstacle. It is hoped that a set of rules may be set up at some early date so that complete plans may be presented for a 1953 contest. Any ideas that you may have can be sent to either Air Trails or Dick Everett, so that they may be given serious consideration.

—DICK EVERETT

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Contact man's city is same as that in which club is located if not listed.

This Directory lists the clubs currently active which responded to the questionnaire sent out by Air Trails. Organizations that do not appear here but are still active are urged to forward the necessary information to us in order to obtain supplementary listing. Address: Air Trails, 304 E. 45th St., New York 17, N. Y.

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New York (State). *Albany* Flying Modelaires, c/o Betty Orem, 27½ Clinton Ave. *Bay Shore* Aero-Aces, c/o Charles Frieman, 452 N. Windsor Ave., Brightwaters. *Beacon* Air Trailers, c/o Cy Alberti, 18 Park Ave., P. O. Box 365. *Buffalo* Miniature Aircraft Engineers, c/o George Swank, 67 Grant St. *Cortland* Thermal Chasers, c/o L. Potter, Jr., 6 Chestnut St. *Oriskany* Hell Razors MAC, c/o Charles K. Nelson, 123 Oklahoma Ave. *Syracuse* MAC, c/o H. Copeland, 101 Lincoln Ave.

Ohio. *Chillicothe* Fly Guys, c/o Gene Osborne, Box 113. American Airlines GMC, c/o H. D. McCall, 9609 Lorain Ave., *Cleveland*. *Dayton* Buzzin Buzzards, c/o H. L. Roe, Jr., 3306 Harvard Blvd. *Dover* Aero Bugs, c/o Harry A. Seibert, 214 Poplar Street. *Geneva* Buzz Bugs MAC, c/o Leonard A. Dingle, Bartholomew Rd., Madison. Greater Cincinnati Controlliner MAC Inc., c/o William Grundhoefer, 4124-33rd Ave. *Greenfield* American Legion MC, c/o Tildon Hike, 336 N. 4th St. Lake Erie Gas MC, c/o John W. Grega, 10422 Gay Ave., *Cleveland*. Medina Model Club, c/o Edward S. Jackson, Albion Rd., R.D. #1, *Strongsville*. Northeastern Ohio Model Engineers, c/o Frank S. Pavliga, P. O. Box 2554, *Youngstown*. *Sandusky* Sad Sacks, c/o A. J. Schaefer, 432 Dewey St. *Shelby* Balsa Buzzards, c/o H. L. Robinson, 16 W. Madison Ave. *Springfield* Strato-Hawks, c/o Aaron M. Smith, 1813 Woodward Ave.

Oklahoma. *Ada* Prop Spinners, c/o Roland E. Descans, 528 E. Main St. *Chickasha* Sky Chicks, c/o Mrs. Ralph Williams, 1007 So. 18th St. *Oklahoma City* Flying Maniacs, c/o C. Nixon, 639 S.W. 28th St.

Oregon. *Eugene* Prop Spinners, c/o Maury Morton, 890 West 12th St. *Irrigon* C, c/o Bud Pharsesof, Box 43. *Lebanon* Pop Spinners, c/o Willard E. Cooper, 259 Elmore St. *Portland* Fireballs, c/o Martin Arrigotti, 3732 S.E. 28th Ave. *Portland* Stardusters, c/o Dave Hewitt, 1633 N.E. 108th St. *Salem* Capital Sky Cats, c/o Earl Cayton, 879 No. Liberty St. *Salem* MAC, c/o E. J. Roth, 2080 Market St. *Tillamook* Gas Model Club, c/o Don Helfer, 5211 3rd St.

Pennsylvania. *Bristol* Aeromodeleers, c/o Albert Abrams, Jr., 1031 Pond Road. *Hazleton* Flying Gremlins, c/o James Lindeman, 88 No. Wyoming St. *McKeesport* National A of ME, c/o Andrew C. Kushner, 707 Hazel St. *Mt. Wolfe* Skymasters, c/o C. M. Ehrhart, 21 S. Fifth St. *Pittsburgh* Flying Circuits, c/o Norman Tauberg, 1118 Morningside Ave.

South Carolina. *Columbia* Aero Modelers, c/o W. L. McEntire, 608 Harden St.

Texas. *Dallas* Cliff MC, c/o William C. Morgan, 3102 S. Llewellyn St. Oak Cliff U-Control MC, c/o Clyde Surrell, 2904 S. Ewing St., *Dallas*. *Port Arthur* Air Cadets, c/o Buddy Brammer, 600 Neches Ave. Sabine Area MC, c/o E. D. Patterson, 2170 Pecos St., *Beaumont*. Skyliners, c/o Kenneth Jennings, Route #2, *Tulia*.

(Continued on page 74)

MODEL AIRCRAFT BALSA WOOD

STRIPS
36" Lengths

1/16x1/16	8	5c
1/16x1/8	6	5c
1/16x3/16	4	5c
1/16x1/4		1c
1/16x3/8	3	5c
1/16x1/2		2c
3/32x3/32	6	5c
3/32x3/16		1c
3/32x1/4	3	5c
3/32x3/8		2c
3/32x1/2		2c
1/8 x1/8	4	5c
1/8 x3/16	3	5c
1/8 x1/4	2	5c
1/8 x3/8		3c
1/8 x1/2		4c
1/8 x3/4		5c
1/8 x1		6c
3/16x3/16		4c
3/16x1/4		4c
3/16x3/8		5c
3/16x1/2		6c
3/16x3/4		8c
3/16x1		9c
1/4 x1/4		4c
1/4 x3/8		5c
1/4 x1/2		7c
1/4 x3/4		10c
1/4 x1		12c
5/16x5/16		5c
5/16x3/8		6c
5/16x1/2		8c
5/16x5/8		9c
5/16x1		12c
3/8 x3/8		7c
3/8 x1/2		10c
3/8 x3/4		12c
1/2 x 1/2		10c
1/2 x3/4		15c
1/2 x1		14c
5/8 x5/8		15c
5/8 x1		18c

PLANKS
36" Lengths

1/2x2	20c
3/4x2	25c
1 x2	35c
1½x2	50c
2 x2	65c
½ x3	35c
¾ x3	40c
1 x3	50c
1½x3	70c
2 x3	90c
3 x3	1.35
1/2x4	40c
3/4x4	55c
1 x4	75c
1½x4	95c
2 x4	1.25
3 x4	1.80

SHEETS
36" Lengths

1/32x2	7c
1/16x2	7c
3/32x2	8c
1/8 x2	9c
3/16x2	11c
1/4 x2	13c
1/32x3	11c
1/16x3	11c
3/32x3	13c
1/8 x3	15c
3/16x3	17c
1/4 x3	19c
3/8 x3	27c
1/32x4	15c
1/16x4	15c
3/32x4	17c
1/8 x4	20c
3/16x4	23c
1/4 x4	25c
3/8 x4	36c

BLOCKS
6" Long

1x1	3c
1x2	6c
1x3	9c
1x4	13c
2x2	11c
2x3	16c
2x4	22c
3x3	23c
3x4	30c

12" Long

1x1	6c
1x2	12c
1x3	18c
1x4	26c
2x2	22c
2x3	32c
2x4	44c
3x3	46c
3x4	60c

18" Long

1x1	9c
1x2	18c
1x3	27c
1x4	39c
2x2	33c
2x3	48c
2x4	65c
3x3	70c
3x4	90c

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OK Bantam .19	$ 9.95
Fox .29-.35	$14.95
Forester .29-.32	$14.25

NO. 2 SPECIAL!
With Motor Listed:
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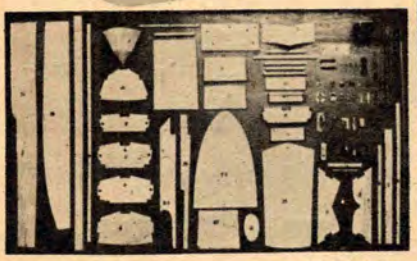

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Elf Four .396 IGN. 49.50	Ohlsson .33 .....13.95	Spitzy SNR. .045 ..... 5.45
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Forster G .31 .....14.25	O.K. Cub .039 ..... 4.95	Trumph .49 .....18.00
Fox .29.....14.95	O.K. Cub .049 Kit.. 4.95	Triumph .51 .....18.00
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FREE 12 matched propellers included absolutely free with every motor purchased at the full regular price.

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(*Continued from page 73*)

Washington. *Bellingham* Flying Bee's, c/o Ralph C. Graham, 223 E. Holly St. *Bremerton* Prop Spinners, c/o Doug Beagley, 116 Oak St., Sheridan Park. *Everett* Model Air Force, c/o E. J. Sigmon, 2605 Colby Ave. *Ft. Lewis* Cloud Clippers, Sgt. Davis, c/o Model Shop. *Ft. Lewis* Cloud Clippers, c/o Educational Center #2, E. F. Witt, Box 134. *McChord* Model Maniacs, c/o Sgt. Dukes, c/o Hobby Shop, McChord Field. *Mount Vernon* MC, c/o Bub Peck, c/o Dependable Motor Co. Northwest Associated Modelers, c/o Rex G. Hayes, P. O. Box 867, *Olympia*. Olympia Miniature AC, c/o Ken Spiller, *Olympia*. Lions Modelairs, c/o Gary S. Canoee, 424 No. Ninth St., *Pasco*. *Seattle* Sky Hawks, c/o Jerry Everett, 141 North 85th St. Northwest Hobby Model AC, c/o Mrs. Mae Perry, N. 102 Monroe St., *Spokane*. *Vancouver* Glo Bugs, c/o R. K. Ragan, 2006 Main St.

West Virginia. *Beckley* Modeleers, c/o Mrs. Gene Keatley, 217-219 Prince Street, Box 348. Ohio Valley Aeromodellers, c/o Harold L. Bowman, 207 S. Penn St., *Wheeling*.

Canada. Malasapina Model Maniacs, c/o Don D. Jelley, General Delivery, *Westview, B. C.* Moncton MAC, c/o L. H. Lockhart, 182 Portledge Ave., *Moncton, N. B.* Ottawa Model Aircraft C, c/o Warren Sanderson, 175 Fifth Ave., *Ottawa, Ont.* Shearwater Model Aircraft C, c/o Gerald T. McGloin, 41 Morris Ave., *Clarence Park, N. S.* Vancouver Gas MC, c/o J. F. Barnes, 3870 Dundas St., *Vancouver, B. C.* Canadian Gas Model Club of Toronto, c/o Mrs. M. Hockin, 62 St., John Road West, *Weston, Ont.* Windsor Model Aircraft C, c/o A. G. Ackerman, 1160 Marentette Ave., *Windsor, Ont.*

British West Indies. Jamaica Aeromodellers Club, c/o G. Leslie A. Drew, c/o Bryden and Evelyn Ltd., 54 Church St., *Kingston, Jamaica.*

The following received at press time:

Maryland: *Bethesda* Prop Twisters, c/o Kenneth Ingram, 1406 Harvard St., N.W., Washington, D. C. **Massachusetts:** *Taunton* Enginairs, c/o Anthony P. Correia, 38 Purchase St. **Minnesota:** *Mankato* Modeleers, c/o William B. Thomas, 105½ Hanover St. *North St. Paul* Polar Buzz Bugs, c/o James Beltes, 2067 Lake Blvd. **Canada:** *Edmonton* Model Aeroneers, Box 4337, *Edmonton, Alta.*

MODELPLANE CONTEST CALENDAR

Meet directors are invited to list forthcoming competitions in this column. Advise Air Trails 90 days in advance to do the most good for your meet. If any area restrictions on entries, be sure to state. Address of contact man is same city as site of meet unless otherwise specified. Where info on events is furnished these are abbreviated as follows: indoor rubber powered—IR; outdoor rubber powered (unlimited)—ORU; outdoor hand launched gliders—OHLG; indoor gliders—IG; towline gliders—TL; free flight gas—FF; control line speed—SP; control line scale—CLSC; control line stunt—ST; team racing—TR; combat—COM; radio control—RC; rise-off-water free flight—ROW; carrier decks—CAR; free flight scale—FFSC; non-flying exhibition scale—NFSC; jet speed—J; control line endurance—CLEND; Wakefield models—WAK.

Aug. 10—Hamburg, N. Y., Cloud Busters' meet. Mrs. Robert Burdick, 108 Maple Ave., FF-SP-ST-RC.
Aug. 10—DeKalb, Ill., Cloud Dusters' Flying Circus. Dutch Hess, 137½ E. Lincoln. ORU-FF.
Aug. 10—Lancaster, Pa., MAC meet. Paul Liller, 213 E. Ross St. ORU-TL-ST-FF-TR-RC-BEAUTY.
Aug. 17—Salem, Ore., MAC meet. E. J. Roth, 2080 Market St.
Aug. 20-25—Detroit, Mich., 6th International Plymouth Model Plane Contest. Contact your nearest Plymouth Dealer.
Aug. 24—Los Angeles, Cal., Inglewood Flightmasters A/2 FFSC. W. L. Butler, 8856 Earhart Avenue.
Aug. 24—Moline, Ill., restricted meet for Iowa-Ill. AA members. Jack Stucker, 4105 14th Ave., Rock Island.
Aug. 24, 30, 31-Sept. 1—Salt Lake City, Utah, Annual Douglas Trophy Contest. Pending. J. H. Douglas, 133 E. 2nd South St. OHLG-FF-SP-CLSC-ST.
(Aug. 30-Sept. 1—Detroit Wayne Major Airport, Mich. Continental Midget races at 5th Int. Aviation Exposition.)
Aug. 31—Windsor, Ont. Canadian Jetex championships. A. G. Ackerman, 1160 Marentette Ave.
Aug. 31—Waterloo, Iowa., "Daily Courier"—Rec. Comm. Prop Twisters meet. E. H. Fletcher, 2416 Rownd, Cedar Falls.
Aug. 31-Sept. 1—Pawtucket, R. I., 6th All-New England meet. A. C. Bergeron, 55 Ricard St., Seekonk, Mass. Includes RC.
Aug. 31-Sept. 1—Crossville, Tenn., 7th State meet. Roy A. Stone, jr.
Sept. 1—Far Hills, N. J., Lions Club C/L meet. C. Norman Welsh, Dumont Rd. SP-CLSC-BEAUTY-ST-TR-J.
Sept. 7—Hartford, Conn., State CL Championships. Richard Matava, 358 Prospect Ave.
Sept. 7—Lumberton, N. C., Prop Snappers contest. R. C. Stone, 1906 Rowland Ave. SP-ST-CLSC.
Sept. 7—Defiance, Ohio, Maumee Valley meet, A. G. Schiperoot, RFD #1. FF A/2-SP-ST-RC-J.
Sept. 14—Milwaukee, Wisc., Aeromodelers meet. C. T. O'Harrow, 2478 N. 72nd St.
Sept. 14—Akron, Ohio, Women's Chap. NAA & Soc. of MPE meet. Miss Frances Alexander, 25 Mull Ave.
Sept. 14—Perth Amboy, N. J. Changed from May 18. Fiskin's Bros. & Rec. Dept. meet. M. J. Maciag, 433 Douglas Ave., Avenel.

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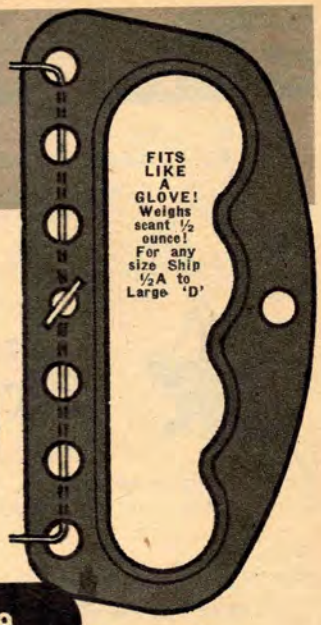
SUPER-FEEL, LITE-WATE ½ OZ. HANDLE & REWIND REEL



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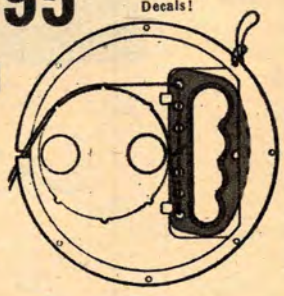

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'handy-reel' is new, safe practical '2-way' control handle and reel! Light enough to 'feel' smallest ½A yet rugged and strong for heaviest air-giant! WITHSTANDS PULL IN EXCESS OF 100 lbs! Detachable handle fits into reel—for winding & storing line! Same easy, precision control for right or left hand use!

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½A FLYING SCALE MODELS

COMPLETE WITH Redi-Carved & Hollowed Fuselage

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Diameter—6"
Weight—½ ounce
Center-Balanced
Thonghole
CONSTRUCTION
Sturdy, crash-proof Plastic

MAIL ORDERS FILLED (No C.O.D.)
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3087 3rd Ave. (AT-952), New York 56, N. Y.

INTO CUB!

(*Continued from page 32*)

"You deserve the highest accolade for having had the courage and the self-effacement to have quoted a contemporary editor. You know, from the past experience, how I feel about the importance of model meets. No one single effort in my opinion, does so much to inspire interest in what you very nicely term, 'Those air-eager kids'."—*Ronald S. Gall, Manager of Public Relations, Curtiss-Wright Corp.*

". . . want to congratulate you on your vision and for bringing this message to the Aviation Industry. We, ourselves, do help with a youth training program in Elmira and are doing everything we can to encourage a more widespread education of the youth."—*Paul A. Schweizer, Vice President, Schweizer Aircraft Corp.*

"Give every American boy an opportunity, plus encouragement, to build models as soon as he is old enough. Bring him up, as he grows older, through the various stages of more complicated model building and model flying, then, when he is 16 to 18 years old, make it possible for him to learn to fly—then those showing the most interest and according to their inclinations, take them into the Air Force, airline flying and other phases of aviation."—*Alfred B. Bennett, Vice President, Taylorcraft, Inc.*

"I think your message to the Aviation Industry is very fine. It comes boldly to the point without any diplomatic double-talk."—*Ralph P. Johnson, Executive Director, Model Industry Association, Inc.*

"It is an admitted fact that there are hundreds of thousands of potentially enthusiastic air-minded youngsters in our high schools, prep schools, and colleges who would very definitely and eagerly go out of their way to partici-

(*Continued on page 78*)

R/C NEWS

No more sequence worry when you use the "E-Z" Automatic Radio Control Switch
Pat. Pend.

Just disconnect your old push button and hook these two wires to the two terminals on the "E-Z" AUTOMATIC R/C SWITCH BOX
THAT'S ALL ONE YEAR GUARANTEE

Terminals for the 2 Trans Wires

4⅜"L x 1½"D x 3"W

FEATURING:

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- Turn control knob right—you will get right rudder
- Turn control knob left—you will get left rudder
- No electric motors, gears, springs or batteries
- No changes to make on the escapement
- Built-in emergency push button
- Light in weight, 6 oz. Complete

MODEL 102—for 2 arm self-neutralizing escapements
MODEL 104—for 4 arm escapements—($1.00) extra
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CAN BE USED WITH ANY TRANSMITTER
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British Spitfire	$2.75	P-51 Mustang	$2.75
FW-190 Focke Wulf	2.75	F6F Hellcat	2.75
P-40 Warhawk	2.75	F8F Bearcat	2.75
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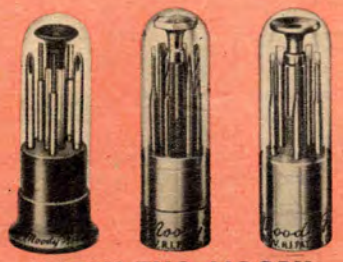
Combat Sky Box is stunt job by F-B Model Aircraft. Takes Cl. A and B engines; wingspan 36 in.; wing area totals 210 sq. in. Parts are die-cut; wing leading and trailing edges formed and notched. Built-up fuselage, spring steel landing gear. Capable of full stunt pattern; 6" chord. $2.95.

Something new for radio control fans is the E-Z Automatic R/C switch which gives successive turns at your command. No motors, gears, springs or batteries. Weighs 6 oz. complete; Osborn Hobby Associates. Model 102 for 2-arm self-neutralizing escapements, $8.50; 4-arm, add $1.

OSBORN R/C SW



HAPPY THO MOODY

We're really enthusiastic over these Moody (Machine Products Co.) precision small tool sets! From left: combination Allen type wrench and Phillips head driver PA-5 set; DR-6 drill and screw driver set; SC-5 screw driver set. PA-5 is $2.50; SC-5, $1.50; DR-6, $2.35. Swell gifts.

Here's an interesting new kit model by Berkeley: North American AJ-1 "Savage" for twin g.p. power (.045 to .099) and Jetex which scales down perfectly the AJ-1's real jet engine in tail. Fuselage and nacelles carved and hollowed; 5 metal hub rubber wheels, and embossed bubble canopy.

SAVAGE CUSTOMER

MODEL SUB

Model builders who have been badgering us as to a source for submarine kits can now look to Cavacraft. Philadelphia firm offers the USS Perch snorkel-type sub in kit E-1 for 75¢. Features ready-formed conning tower, snorkel, gun, colorful decals. Kit includes cement and stand.

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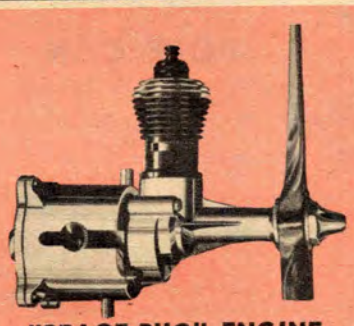
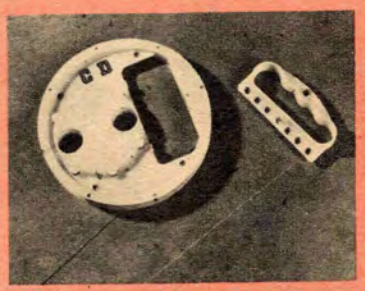
VECO'S F-51 FIGHTER

Henry Engineering's (Veco) semi-scale control line stunt F-51 Mustang is a big, big job—4 ft. span designed for Veco .29 or .31 engine. Prefabbed 'n' all. Length is 34.5 in.; wing area works out to 408 sq. in. For stunt, combat or fancy Sunday flying. Original model was real beauty.



"SPACE-BUG" ENGINE

"Space-Bug" is name of the new Thimble-Drome engine by L. M. Cox Mfg. Co. A Half-A motor; it sells for $6.95. Has many unusual features: no external fuel lines, has air filter, needle valve away from exhaust and prop, comes with plastic-coated wooden propeller.



ART'S HANDY-REEL

Consolidated is offering Art Hasselbach's latest creation, the "Handy-Reel" which takes up to 100 ft. of any-size lines, has been tested beyond 72 lbs. $2.95. Made of impact plastic, is impervious to hot fuels. Used by Cl. D speed winner at Mirror meet. Handle molded-to-hand shape.

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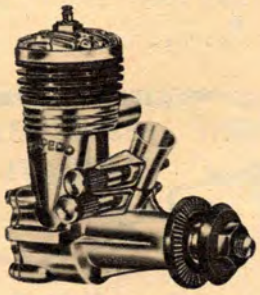
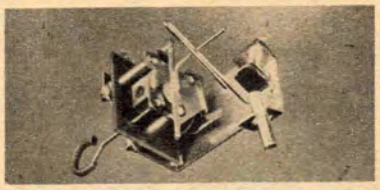
Hope you've ordered your personal copy of Air Trails Model Annual for 1952. For first time it's available by mail from Air Trails, 304 E. 45th St., New York 17, N. Y. Price 50¢ to those in U.S. and Possessions; 60¢ in Canada; $1 anywhere else.

TWO-SPEED TORPEDO .19



K & B establishes another first with the first two-speed glow ignition engine. This engine is equipped with two needle valves and is very practical for use where engine control is desired. Radio Control and other special events as the many carrier event is primarily the reason for the manufacture of this engine. Any reliable motor control unit may be used, however for radio control, K & B recommends the Bonner escapement shown on this page. The Torpedo .19 two-speed will be available soon at $16.95

R/C Motor Control Unit



A special valving arrangement actuated by standard Bonner SN escapement. Reliable, low current drain; provides engine control and cut-off when used with Compound Escapement or other suitable switching arrangement.

Motor Control Unit Complete..... $14.95

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(*Continued from page 75*)

pate in and acquire practical aviation experience and indoctrination on Saturdays, Sundays, holidays, during vacations and at night if a practical program were developed, worked out and offered to them."—*R. L. Burke, Captain, U. S. Coast Guard.*

"It has been my observation, and I say it with regret, that America's aviation interests have not shown enough concern over a build-up of a new generation of young pilots and aviation enthusiasts."—*James V. Bernardo, Assistant to Regional Administrator, Civil Aeronautics Administration.*

"The Soaring Society has believed for many years that the interest of the American Youth could be maintained and stimulated in aviation through gliding and soaring, and that this could be done by the aviation industry and the interested departments of government, to their advantage, by supporting the activity through the Soaring Society and local gliding and soaring clubs. The urgent need at the moment is prototype gliders or sailplanes that could be constructed partially or wholly in home shops, and moral and financial support for the small groups or clubs who would build and fly them."—*Jon D. Carsey, President, Soaring Society of America.*

DOPE CAN

(*Continued from page 54*)

Chasers, 329 King St., E.; Niagara Falls Aeronauts, c/o James Crossley, Staff House, Box 240; London Modelaires, 381 Talbot St.; Thermite MAC, 922 Barton St., E., Hamilton; Strathroy MAC; Guelph MAC, 45 Yarmouth St.; Thermal Cruisers, 16 Hope St., Toronto; Belleville Aero Modelers, 132 Bleeker Ave.; Stratford PAL Club, Leeson Motors, 85 Waterloo St., S.; Galt MAC, c/o H. Zinn, 10 Lincoln Ave.; A. V. Roe MAC, Box 430, Terminal "A," Toronto; Toronto Gashoppers, 1070 Danforth Ave.; Ottawa MAC, 489 Lisgar St.; Kitchener-Waterloo PAL Club, 263 King St. E., Kitchener; Brockville MAC, 208 Church St.; 415 Wing RCAF Assoc. MAC, Picton; Simcoe MAC, 27 Kent St.; Orillia Modelaires, c/o Lawrence Shaw, RR #1; Unionville MFC, c/o Ken Groves; Junior Wings of Sarnia, 762 Wellington St., E.; Centralia MAC, RCAF Sta.; Hamilton MAC, 446 Charlton Ave., W.; Chatham PAL Club, c/o Bert Stacey Motors; Y. Rotary MAC, 68 Huron St., Woodstock; Oakville MFC, c/o Hitchcox Motor Sales.

ALBERTA—Lethbridge PAL Club, Imperial Motors. *SASKATCHEWAN*—Moose Jaw PAL Club, Elliot Motors, High St., W.; Workton PAL Club, 12 4th Ave. *MANITOBA*—MAL of Manitoba, 53 Osborne St., Winnipeg.

QUEBEC—Montreal Aeroneers, 1250 Allord St.; Montreal Sleepless Knights, 2083 Bleury St.; Lakeshore Thermal Chasers, 552 Lakeshore Rd. Beauprairie; Montreal MAC, 5767 Hudson Rd.; Apt. 1.

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NEW BRUNSWICK—Saint John Prop Spinners, 24 Brunswick St.; Fredericton PAL Club, c/o Mc Ewen Motors; Chatham Balsa Butchers, c/o F/O R. D. Carew, RCAF Sta.; Moncton MAC, 182 Portledge Ave.

Apparently not affiliated with the MAAC as yet are these three groups: Vancouver, BC, Strato Cats, 44 Kingsway Ave.; Vancouver, BC, PAL Club, 2290 Main St.; and Woodstock, Ont., MAC, 148 Graham St.

Submitting Plans. Peter Noble of Dover, Mass., reports that he's 13 and much interested in model planes. He has designed a flying wing glider and rubber-powered job. Wants to know how to interest AT in publishing his plans. Since this is a recurring request, we pass along the poop from group.

If you have an original design or a scale model you've worked up yourself from scale outlines and want to find out if the editors would like to run an article with plans on your ship in AT, the best thing to do is send a big, clear photograph of the model together with a description of its construction and its flying history to date. Very simple, n'est-ce pas? That'll give the eds something to go on and enable them to get off a speedy yea or nay to you.

And remember this, prospective contributors. Don't be discouraged if your design isn't accepted, because rejection is not a condemnation of the design—not at all. Usually it's more because—well, let's say you've got a hot stunt model—the editors have already purchased a similar design, or perhaps one is already at the printer's for early publication or is in the "being-worked-up" stage.

Or maybe some rules changes are coming along you're not familiar with, but the eds are, so a different type of model will be needed, or maybe the editors are waiting to see what turns up in the winners' circle at the National meet before purchasing any more stunt model designs. You see, there are all sorts of different and valid reasons for some of those "nos" that go out to would-be contributors.

But here's one good point to bear in mind. A majority of the designs you see in AT are suggested by the author or some builder who may have seen the model somewhere. And we're always on the look-out for new, different, unusual models. So keep plugging away.

NYC R/C'er, Arthur Baderian, 402 Second Ave., New York, N. Y. would like to hook up with a NYC radio control group. Any takers?

So You Think Those Were the Days? Ev Tasker, former stalwart member of the Jordan Marsh-Boston Traveler Junior Aviation League (may it rest in peace) of Bos-

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ton, and now of New Hampshire, sends along a yellowed folder from the old Airplane Model League of America (AMLA, may *that* rest in peace, too).

Here's a real bargain in kits: "The Indoor Commercial Model is built to resemble a real ship and still have good flying qualities. Its official record, 24.6 seconds. The kit, complete, costs $1.75." Or: "Bamboo—¼x15 inches, per strip 2¢; per pound (85 pieces) . . . 60¢." As an old bamboo-breaker from way back and a harried builder of the indoor commercial (which only remotely resembled a real plane!), we say give us modern times with its Half-A's, control line scale, Jetex and Nordic A/2 gliders. Live in the past if you want to, cousin—we'll take modeling as it stands today!

Clubs. Al Beammer, Sr., says the Port Arthur, Texas, MAC is having difficulty securing flying sites because folks complain about the noise from model engines. He asks for ammunition in the form of letters, reports and the like which will convince the good citizens of Port Arthur of the importance of aeromodeling. Maybe your group has had similar difficulties; if so, let Al know how you licked the opposition—hez at 600 Neches Ave.

Two main problems seem to face model clubs. First, the lack of suitable flying space. This usually applies to free flight, although in large metropolitan centers it can also hold back control line activity. This is a physical lack—there just ain't space enough in which to swing a line or R.O.G. an F/F job. So the usual answer to #1 is to move flying activities out towards the end of town. So, we gotta travel to fly.

The next main problem, and exemplified by the Port Arthur flyers, is that you do find a suitable space for either F/F or C/L and wot hoppons? Some, maybe all the nearby homesteaders complain bitterly about the yowling engines. The question is: are these folks justified or just cantankerous? If the noise is really bad—and don't you be the judge, we know you're biased, drag along some impartial individual and get his opinion—maybe you should cut down on the size of the engines used there; maybe certain types of flying should move farther out.

But think about what you can do to maintain model flying at that particular site and at the same time meet any legitimate complaints by the non-modeling public. In many instances this has been done. Not everywhere, though. New York City is one example. U-control flying has been banned in Van Cortlandt park again. The Bronx Balsa Butchers are now forced to fly in Pelham, which means quite a jaunt for most BBB'ers. Don't confuse the BBB's with the BBB's—the latter is the Bronx Balsa Bugs. Both clubs get along fine together. Vincent Picarello is president of the Butchers. His brother (?) J. Picarello is treasurer, while D. Muro is sec. Vince can be reached at 563 E. 191 St., Bronx 58, if you're interested.

The Butchers' principal interests are stunt, sport and scale models.

We are informed of the existence of the Glo Bugs of Vancouver, Wash. Officers are Dale McGee, pres., Douglas Jergens, sec., and Lyle Ragan, treas. The trend out there is to stunt and speed, according to Eric

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Meyerson (3622 "V"), corresponding sec. The GB's have about 25 active members. The best stunt men ready to challenge all comers are Andy Andruss and Jim Cooper. Eric says Jim is a hot speed boy, too. The club, a bit over a year old, is getting a toehold on team racing. We'll be looking for more news of you fellows. We do like that nice, clear handwriting of Eric's. (If you can't get a typewriter, men, for heaven's sake—write so we can read wot ya hafta say—hey?)

Rechartering deal: the Perth Amboy Model Airplane Club is the new name for the old Amboy Aero Fiends. Rechartered by the AMA and all; more'n 30 active members; all ages; members seem to fly all types of models; meeting place is Roessler's Gym, every Friday, 8 p.m. Officers: Martin Maciag, Sr., pres.; Bryan Jensen, veep; Bernie Massabrook, sec.; Frank Ujpal, treas. For more info contact Bernie at 750 Hommann Ave., Perth Amboy—New Jersey, wot else?

Back to Gas! Roy De Jean, 710 Fort St., Plaquemine, La., wants to trade a just-broken-in Dooling .29 glow plug motor for some ignition engine of .29 displacement or higher. Gad, man, sounds like progress in reverse. Guess Roy comes from a gas producing state and figures he should promote the home product.

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252—Batiri free flight; Everitt's Wakefield; Bonnie Lass A/2 team racer; Combateer combat U/C; Half-A Copter.

152—Art Chester Racer U/C flying scale; Hot Canary jet speed; K. C. Cutie semi-scale F/F; Do'nuo' F/F A/2.

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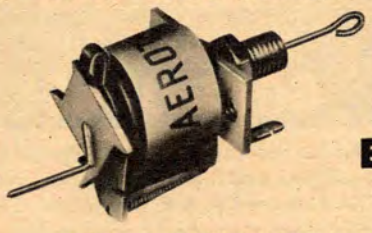

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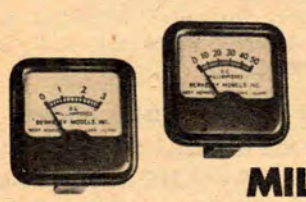

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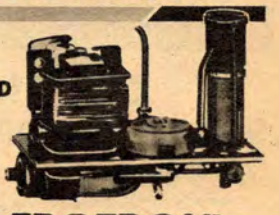

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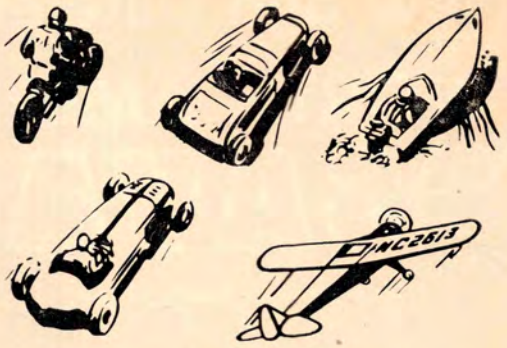

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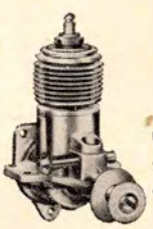

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